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Historical Society

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VOL. 31

NO. 1

THE INDUSTRIALIST

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**KANSAS STATE
AGRICULTURAL COLLEGE**

♦ ♦ ♦

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THE INDUSTRIALIST.

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A COURSE IN ARCHITECTURE.

IN order to meet the increasing requirements of the building trades of the State, the Board of Regents of the Kansas State Agricultural College at their Commencement session organized a four-years' course in architecture, and requested the Faculty to put it in operation during the present college year. The preparatory and the general scientific studies of the new course will be the same as those of the two organized engineering courses, and its work in perspective and geology the same as that of the general science course, while the professional and art studies will be in charge of the newly organized Department of Architecture and Drawing.

The new course will fill a long-felt want. There has not been a term during the last twenty-five years without applicants for such work. Dozens of special students received instruction in architectural drawing and history of art in the Department of Industrial Art and Designing, and are now doing good work in architects offices, terra-cotta works, structural iron shops, planing-mills, and stone-yards. One of the graduates of this College, who made a specialty of architectural work while a student here, is a leading architect in New York; another is at the head of his profession in Kansas City; another is a successful architect in Old Mexico. Several of our pupils are designers in architectural iron-works in Chicago, Ill.; another one wrote recently from New York that he, as the chief superintendent of construction of a leading building firm, had "just erected the largest office building in the world"—a building costing over three million dollars. The organization of a regular course in architecture will be hailed with gratitude by this class of young men, all the more because there is no other institution in the State offering anything of the kind.

The Board of Regents feel, too, that a great industrial school like the Kansas State Agricultural College should lend a helping hand in the correct and speedy upbuilding of the profession

ARCHITECTURAL COURSE.

First Year.

FALL TERM:

Geometry I	5	74
English Classics	5	66
Botany II	5	48
<i>Field-work</i>	2	48
<i>Free-hand Drawing</i>	2	63
<i>Woodwork I</i>	4	75
<i>Military Drill</i>	4	80

WINTER TERM:

Geometry II	5	74
Advanced Composition	5	67
Agriculture	5	45
Elementary Psychology	1	85
<i>Woodwork II</i>	3	75
<i>Object & Geometric'l Drawing</i> ,	4	63
<i>Military Drill</i>	4	80

SPRING TERM:

Algebra IV	5	74
Rhetoric I	5	67
Elementary Physics	5	88
<i>Laboratory</i>	2	88
<i>Blacksmithing I</i>	4	75
<i>Elementary Projection</i>	2	63
<i>Military Drill</i>	4	80

Second Year.

FALL TERM:

Chemistry I	5	51
<i>Laboratory</i>	2	52
Trigonometry	5	74
<i>Surveying</i>	2	74
Shop Lectures I	1	75
German I	5	70
<i>Projection Drawing</i>	2	63
<i>Blacksmithing II</i>	2	75
<i>Military Drill</i>	4	80

WINTER TERM:

Chemistry IV	2½	52
<i>Laboratory</i>	4	54
Kinematics	5	75
German II	5	70
<i>Descriptive Geometry</i>	4	63
Public Speaking I	2½	95
<i>Foundry</i>	2	75
<i>Military Drill</i>	4	80

SPRING TERM:

Chemistry V	2½	52
<i>Laboratory</i>	4	54
German III	5	70
Analytical Geometry	5	74
Public Speaking II	2½	95
Shop Lectures II	1	75
<i>Mechanical Drawing I</i>	2	75
<i>Pattern-making</i>	2	75
<i>Military Drill</i>	4	80

Third Year.

FALL TERM:

Differential Calculus	5	74
Physics I	5	88
<i>Laboratory</i>	4	88
Mechanics	2½	75
Art Lectures I	1	A
<i>Linear Perspective</i>	4	63
<i>Architectural Drawing</i>	4	A

WINTER TERM:

Integral Calculus	5	74
Physics II	5	88
<i>Laboratory</i>	4	88
European History	5	70
Art Lectures II	1	A
<i>Architectural Drawing</i>	6	A

SPRING TERM:

Definite Integrals	2½	74
Civics	5	70
Rhetoric II	5	67
Home Architecture	2½	64
Art Lectures III	1	A
<i>Architectural Drawing</i>	4	A
<i>Modeling</i>	4	A

Fourth Year.

FALL TERM:

American History	5	70
Economics	5	71
Heating and Plumbing	2½	A
Graphic Statics	2½	77
Art Lectures IV	1	A
<i>Architectural Drawing</i>	4	A
<i>Architectural Composition</i>	4	A

WINTER TERM:

English Literature	5	67
Geology	5	69
Applied Mechanics I	5	79
Art Lectures V	1	A
<i>Architectural Drawing</i>	4	A
<i>Architectural Composition II</i> ,	4	A

SPRING TERM:

Applied Mechanics II	5	79
<i>Specifications</i>	2½	A
<i>Estimates and Contracts</i>	2½	A
Thesis	5	A
<i>Architectural Composit'n III</i> ,	6	A

First column of figures indicates hours per week.

Second column shows page in catalogue where full description may be found.

Letter "A" in second column indicates Special Architectural Branches described in this outline.

Subjects in *italic type* do not require study outside of class.

which, more than any other, is responsible for the artistic and sanitary conditions of our cities and individual homes. They feel that a great State school like this should assist in the development of the various resources of its territory, and that there exists no country in the world that possesses greater possibilities concerning the production of modern building material, such as cement, glass, stucco, brick, salt, lead, zinc, and limestone. They understand that the industrial schools of a people are a true index of its progress and prosperity, and that in time the new course in architecture must become a factor in the general growth of the State.

OUTLINE OF STUDIES.

The following is a brief outline of the special branches of the course:

Art Lectures I.—History and characteristic forms of Egyptian, Greek and Roman architecture.

Art Lectures II.—History and characteristic forms of Romanesque, Byzantine, Moorish, Norman and Gothic architecture. Influence of climate and building materials.

Art Lectures III.—History and characteristic forms of Renaissance and Neo-Greek architecture. Development of plastic ornamentation. Rise and growth of landscape art.

Art Lectures IV.—Modern architectural styles and tendencies. Influences of modern machinery, building materials, and methods of transportation. The Colonial; the American-Romanesque; the American-Classic.

Art Lectures V.—Architectural details; foundations, roof trusses, cast-iron and steel construction, modern conveniences, modern methods of decoration, stairs and elevators, etc.

Architectural Drawing.—This work is closely adjusted to the subjects of the art lectures given during the same term. It consists of exercises in drawing characteristic details, ornaments, facades, plans and sections of some of the representative buildings of the art period studied.

Modeling.—Modeling in clay of architectural details and ornaments. Original work in plastic composition. Glue and plaster moulds, work in plaster casting.

Text-book.—Technique of Sculpture, by W. O. Partridge.

Heating and Plumbing.—Systems of heating buildings; methods of ventilation; dry closets; water-supply; plumbing; sewer construction; sewage disposition.

Specifications.—Discussion and composition of standard specifications for residences and simple public buildings.

Estimates and Contracts.—Detail estimates of stone-work, concrete and brick-work, lumber, plastering, painting, labor, etc. Methods of making lump estimates. Study of quotations of building materials. Discussion of the principles and forms of building contracts. The status of the architect and superintendent. Bonds, mechanics' liens, building laws, etc.

Architectural Composition I.—Original work. Each student is required to draw, finish, trace and blueprint a full set of plans, elevations and details of a modern frame dwelling of given cost, size, and general form.

Architectural Composition II.—Original work. Each student is required to draw, trace, finish and blueprint a full set of plans, elevations and the most important details of a modern five-classroom brick schoolhouse. The general character of the building, its cost, limit, the floor space of its rooms, closets, and halls, and the extent of the required conveniences, are given by the instructor.

Architectural Composition III.—Original work. Each student is required to draw, finish, trace and blueprint a full set of plans, elevations and details of a stone church. The general type of architecture, the character of the building material, the cost, limit of lot and floor space are given by the instructor.

Thesis.—Fourth year, spring term. Each student is required to present for graduation a complete set of general and detail drawings, together with ample specifications, of a building problem outlined for this task during the winter term of the fourth year and approved by the professor of architecture before the beginning of the spring term. It is expected that at least five hours per week of the necessary drawing will be done in the classroom and under the supervision of the professor, and that not less than ten hours per week of home work will be given to the preparation of specifications, estimates, and other work usually required of the practical architect.

EQUIPMENT.

The Kansas State Agricultural College is well equipped to maintain a course in architecture. It has in successful operation parallel courses in mechanical and electrical engineering; its mechanical workshops are the most extensive west of the Missouri; its physical science laboratories are extensive and provided with an abundance of modern scientific apparatus; it owns a rapidly growing collection of plaster casts, tile and terra-cotta samples, marble specimens, etc.; it has a fine collection of models of the five classic orders; a collection of blueprints of nearly all of the Kansas State buildings; a large number of modern books on architecture and engineering; a bound set of the *International* edition of the *American Architect*; a bound set of the *Inland Architect*; a well-equipped blueprint room, etc. The substantial stone buildings of the institution and the complete system of water-supply, drainage, heating and lighting furnish excellent illustrative material to students who intend to benefit by the organization of the new course in architecture.

OUR NEW DAIRY BUILDING AT THE WORLD'S FAIR.

ST. LOUIS, MO., September 3, 1904.

Editor Industrialist: The Kansas ornamental butter display in the Palace of Agriculture has a new acquisition, lately installed, representing in detail the new dairy school building at Manhattan. Through the courtesy of Professor Erf and the boys in his department, this model was fashioned and sent here to represent an important phase of college work at the Exposition. This miniature structure is about two and one-half by three feet, being an exact copy of the original, and in its dress of butter is pronounced by good judges to be a real work of art. The task of "buttering" this splendid gift of the College lads was done by Mr. F. H. Frolich, of New York.

It is hoped that some of the students who so generously furnished this model, which means so much to the future dairy industry of our State, will have an opportunity of viewing their handiwork at the World's Fair. The butter woman, the separator and the dairy house are all typical of what Kansas is doing in this line of work at home, and also what is being exploited at this the greatest of World's Fairs.

A. E. JONES.

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Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

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LOCAL NOTES.

The Board of Regents held their summer session on August 30, at Fort Hays Branch Experiment Station.

Assistant Will Anderson, of the Department of Mathematics, at his request has been transferred to the Department of Physics.

The annual State tournament of firemen will be held in Manhattan, September 27, 28, and 29. Purses aggregating \$650 have been made up for the different contests on the program, and all indications are for a big gathering and a good time.

At the last Commencement session of the Board of Regents a new chair of German was added to the Faculty, and Prof. J. V. Cortelyou, of Heidelberg, Germany, was called for the position. The professor, who was highly recommended as a scholar and practical teacher, has accepted the call.

The College water-works are not finished as yet, and we doubt that the job will be completed by the first of October. The water tank, which holds three thousand barrels, will be a mark in the landscape for twenty miles around—not just a thing of beauty, but a sign that the College believes in pure water and plenty of it.

Prof. Percival J. Parrott, formerly assistant in the Department of Entomology, was in town last week visiting friends. Professor Parrott is at the head of the entomological department of the New York Experiment Station. He went to the World's Fair in company with his brothers, who are now in Clay Center, and will return from there to New York.

The Y. M. C. A. hand-book, for 1904-'05, printed by the College Printing Department, is a neat little pamphlet of eighty pages and chuck-full of useful information to the new students. It contains a calendar for the year, write-ups of the literary societies, advertisements of the principal business houses of Manhattan, maps, etc., etc., and is bound in flexible leather that will stand a good deal of pocket wear.

During the summer vacation Prof. J. T. Willard has prepared a neat little text-book for students of chemistry, which he calls "Lessons in Analytical Chemistry." The book "outlines a series of lessons designed to accompany any elementary manual of qualitative analysis. It also includes a simple exposition of some of the fundamental conceptions of chemistry that are of special necessity to a proper understanding of chemical reactions." The printing and binding was done by the College Printing Department.

The new Auditorium is not yet completed, and may not be entirely finished at the beginning of the fall term. Contractor Henry Bennett is a good builder and he claims that he has done his best in every way to expedite the job, but there is so much of it and good mechanics have been so scarce that it may be a month before the plasterers and painters will be through and the opera seats will be in place. The audience room, with gallery, will seat nearly three thousand people, and more than this number can be squeezed in at special occasions.

Prof. A. B. Brown, of the Department of Music, having resigned in order to devote himself to his musical conservatory at Leavenworth, Kan., the Board of Regents has elected Prof. Olof Valley, of Chicago Conservatory, to the vacant chair. Professor Brown has been the head of the Music Department for over seventeen years and has instructed many thousands of students in vocal or instrumental music. He leaves behind him many warm friends, both among the students and among the Faculty. His successor is a man in the prime of his life, a good singer and a skilled performer. The INDUSTRIALIST will publish his *curriculum vitae* in a future number.

Among the many good things which the Board of Regents have done for the College this summer is the establishment of a separate Department of Economics, with Prof. J. E. Kammeyer at its head. The work in history has grown to such an extent that the professor of history and economics could not do justice to both branches, and a division of the chair became necessary. The teaching of economics in a State institution like this College is, for several reasons, not an easy task, but Professor Kammeyer has been with us for some time and has given such general satisfaction that we are sure of his tact and ability to avoid the rocks of Scilla and Charibdis on which many teachers of this branch have foundered in the past.

Dr. N. S. Mayo, professor of veterinary science at this College and State veterinarian, resigned a few days ago in order to accept a position with the Cuban government at the experiment station at Santiago de la Vegas, near Havana. His new position, we understand, corresponds to that of chief of the Bureau of Animal Industry, in Washington. He is making preparations to remove his family to Cuba and is putting his work in shape for his successor, who has not been found as yet. Doctor Mayo has been connected with this College and with the responsible position of State veterinarian since 1890, excepting the period from 1897 to 1901, and has been a highly efficient teacher, a practical scientist, and a prominent educator. The Agricultural College must have a strong man in this responsible chair, and it fully realizes that it will be a difficult matter to find a man who can do the work in a satisfactory manner. The INDUSTRIALIST wishes the Doctor and his estimable wife a happy and prosperous time in their new country, and hopes that some day they may return to the land of the stars and stripes.

The College Y. M. C. A. has issued a neat, little pamphlet of 20 pages, setting forth the need of a Y. M. C. A. building. The booklet is full of strong arguments for the erection of an Association home, and shows by statistical tables that this College should be able to afford a building costing about \$25,000. Every friend of the institution should send for a copy, study it, and give the young men a substantial lift.

ALUMNI AND FORMER STUDENTS.

Grace Allingham, '04, is teaching domestic science in the Girls' Industrial School, at Beloit.

Elsie Crump, '95, has returned to Boulder, Colo., to resume her teaching in the city schools.

T. C. Davis, '91, is the socialist nominee for congressman from the third district in this State.

Jennie Ridenour, '04, teaches domestic science in Haskell Institute, Lawrence, Kan., this year.

Carl Elling, '04, served recently as a judge of agricultural products at the Smith County Fair.

Jessie Fitz and Anna Monroe, both of the class of 1904, are teaching this year in the Vinland public schools.

Wm. Anderson, '98, assistant in physics, has been spending the summer in study at the University of Chicago.

Howard F. Butterfield, '01, will give instruction in manual training in the Pittsburg, Kan., city schools the coming year.

Ruth Mudge, '01, has returned to Louisville, Ky., where she will again assist in physiology and botany in the Girls' High School.

Geo. O. Greene, '00, assistant in horticulture in the Massachusetts Agricultural College, made a short visit here this summer.

C. S. Dearborn, '04, has been elected assistant in mechanical engineering to fill the vacancy occasioned by the resignation of Mr. Manley.

Hope Brady, '98, after spending the summer in Manhattan, has returned to Liberal, Kan., where she will again teach in the city schools.

F. C. Nicholson, second year in 1899, has been elected foreman of the blacksmith shop in the Mechanical Department of this institution.

W. E. Hardy, '98, has a responsible position with the Fernwood Lumber Company, Fernwood, Miss. He gets a correspondingly satisfactory salary.

Frances E. Thackrey, junior in 1901, has a position in the Indian School at Ft. Shaw, Mont., of which her brother, W. E. Thackrey, '96, is superintendent.

Miss Elsie Waters ['98], who has been in Chicago for the past two years, came Saturday to take a postgraduate course in domestic science.—*Nationalist*.

The friends of W. J. Burtis, '87, and Winifred (Brown) Burtis will learn with sorrow of the death of their daughter Mildred, on August 26, in the eleventh year of her age.

Grace (Strong) Lightfoot, third-year in 1881, after spending some months in attending the Fair and visiting her parents, has returned to her home in Cañon City, Colo.

Geo. D. Knipe, second-year student in 1880, now professor of pedagogy in the Oklahoma Normal School, at Alva, was much interested in a visit to the College during vacation.

F. M. Jeffery, '81, with his wife and daughter, of Seattle, Wash., spent two weeks visiting the exposition at St. Louis and stopped off a day or two to visit the College on their way to Colorado Springs.

Miss Marian Jones ['96] will leave about the twentieth for New York City, where she will attend the Teachers' College during the winter. She will take the course in domestic science.—*Nationalist*.

Mark Wheeler, '97, Captain Sixteenth United States Infantry, has been ordered to Fort McPherson, near Atlanta, Ga., with his regiment. He expects soon to be ordered to the Philippine Islands again.

Miss Edith Goodwin, '03, has been reappointed to the position as teacher of chemistry and German in the Dickinson county high school, which she filled with such satisfaction to her employers last spring.

Bessie Little, '91, has obtained a year's absence from Bryn Mawr University, where she is instructor in physical culture, and will complete her medical course at the Woman's Medical College of Philadelphia.

Mary E. Wilkin, third-year in 1895, paid the College a short visit on her return from attending the great Fair at St. Louis. Miss Wilkin is still with her brothers at the home place, Bow Creek, Rooks county.

Miss Phœbe Smith ['97] left Friday for Pueblo, Colo., where she will resume her position in the city schools there. She has been visiting her father, I. S. Smith, and family for the past two months.—*Nationalist*.

Miss Clara Barnhisel, '04, has been appointed to a government position in the Sac and Fox agency, at Toledo, Iowa. Miss Barnhisel took her examination in May, making a grade of ninety-nine in domestic science.

Clara Spilman, '00, after spending the summer at home and at the Chautauqua Assembly in New York, has returned to her work as instructor in domestic science in the Christian Female Orphans' School, at Camden Point, Mo.

Among the summer visitors at the College was L. G. Hepworth, '97, who was accompanied by Mrs. Hepworth and their little son. Mr. Hepworth is prospering as traveling salesman for F. Barteldes & Co., seedsmen, Lawrence, Kan.

R. W. Clothier, '97, professor of chemistry and agriculture in the Third District Normal School of Missouri, spent a portion of his vacation here. Mrs. Clothier has been visiting her parents, Doctor and Mrs. Blachly, most of the summer.

E. H. Perry, '86, Oklahoma, Okla., visited the College after a number of years' absence. He was much impressed with the evidence of growth in the town as well as at the College, showing therein a strong resemblance to Oklahoma cities.

Laura Day, '93, has divided her vacation between her parents, at Wichita, and her aunt, Mrs. Foster, and other relatives here. She returns to Menomonie, Wis., for another year's work as instructor in domestic science in the Stout Manual Training School.

E. O. Sisson, '86, after spending a year in study abroad, chiefly in Berlin, has resigned his position as director of the Bradley Polytechnic Institute, Peoria, Ill., and will attend Harvard University. He is giving special attention to pedagogy and ethics.

Amos Cottrell, '03, is in the employ of the Payne Investment Company, of Omaha, Neb. This company manufactures a new feed called alfalmo, consisting of one-fourth molasses and three-fourths ground alfalfa, and Mr. Cottrell is presenting the advantages of this feed to the public.

Maud Gardiner, '93, and Rufus C. Obrecht were married by Rev. O. B. Thurston, August 9, at the residence of the bride's sister, Mrs. J. T. Willard, in the presence of relatives and a few intimate friends. They will be at home in Urbana, Ill. Mr. Obrecht is instructor and investigator in horses at the University of Illinois.

The many friends of Arthur L. Frowe, '98, will be pained to learn of his death, at his home near Wamego, September 4. Mr. Frowe was a young man of unusual ability, moral worth, and personal charm, and his death is made trebly sad by the fact that his two brothers, E. M. Frowe, second-year in 1895, and E. L. Frowe, '95, also died in early manhood.

C. P. Hartley, '92, assistant in physiology, Bureau of Plant Industry, United States Department of Agriculture, is the author of Farmers' Bulletin No. 199, which treats of corn growing and discusses the questions of seed, soil and its improvement, methods of planting and cultivation, etc. The bulletin is well illustrated and is a valuable one for all farmers.

W. L. Hall, '98, assistant in charge of forest extension in the Bureau of Forestry, is the author of Bulletin No. 48 of that Bureau, which is an interesting account of the forests of the Hawaiian Islands, with careful consideration of the policy that should be adopted to extend and protect them.

Ivy Harner, '93, has resigned her position as professor of domestic science in the Louisiana Industrial Institute in order to spend a year abroad. She sails for Germany in October. She had the misfortune to be obliged to pass through a siege of typhoid fever the first thing this summer, but has recovered her strength to a considerable extent now.

In noticing the arrivals and departures to and from Manhattan during the summer season one is strongly impressed with the largeness of the number who are graduates of the College, or have been students here, and are filling positions of responsibility and trust elsewhere. Many of these are noticed in these pages, but some have doubtless been overlooked.

Leslie A. Fitz, '02, who for the last two years has been in charge of the Coöperative Cereal Experiment Station, conducted at McPherson, Kan., by the United States Department of Agriculture and the Agricultural College, has received a substantial increase in salary, and will have somewhat different work in the future while retaining general supervision of the coöperative experiments at McPherson and Hays.

Geo. O. Greene ['00] and Miss Alice Worley, a former student here, were united in marriage to day at Natonia, Kan. They expect to arrive at Manhattan Friday, where Mr. and Mrs. S. Jas. Pratt will receive in their honor. From here they will leave, Saturday, for Amherst, where Mr. Greene has a position, and where they will make their future home. Their many friends extend congratulations and best wishes.—*Nationalist*, September 7.

Harry E. Moore, '91, visited the College the latter part of July for the first time since his graduation. He had made allowances in his mind for the presence of many more buildings, but had failed to anticipate the great growth of the trees, which results in hiding the buildings to so great an extent. Mr. Moore is going into business at Watonga, Okla. He will establish a creamery and ice plant, and perhaps develop other related lines of work.

Material has already arrived for a new greenhouse to be put up by Henry Moore ['94], on his place in the south edge of town. The house will be built just east of Mr. Moore's residence and will be used exclusively for carnations. It will cover three thousand square feet of ground, this being only about half as large as the one west of the dwelling. Work will begin immediately, and it is expected that the new house will be in running order by October 1. Mr. Moore's hands and brains are never idle, his energy being the secret of his success in all business affairs.—*Nationalist*.

Henry M. Thomas, '98, attended the Hill-Perry wedding and visited the College. Mr. Thomas enjoys his work as collector for the J. I. Case Thrashing Machine Company. His field is the south half of the State. His work certainly agrees with him, as he has much better health than when a student.

S. Sisson, at one time a student and more recently professor of zoölogy in this institution, has accepted a lectureship on anatomy in the Starling Medical College, Columbus, O. At the same time he retains his position as professor of comparative anatomy in the Ohio State University. He and his wife, Kate (Oldham) Sisson, '92, visited their relatives and friends in Kansas for a few weeks this summer. Doctor Sisson expects to go abroad for about fifteen months, beginning next June, giving special attention to human anatomy and physiology.

Nellie Kedzie Jones, '76, is in much demand as a speaker. Since her address at the General Federation of Women's Clubs at St. Louis, the State Federations of Kentucky, Maine, Nebraska, and New York have secured her, and she has refused the requests of three other State Federations. She is now enjoying a visit from Mrs. Hood, Prof. S. C. Mason, '90, and Mrs. Mason. Mr. and Mrs. Jones, Professor and Mrs. Mason and Mrs. Ella (Gale) Kedzie, '76, spent some time this summer at Crystal Lake, Mich., where Mrs. Kedzie has built a log cabin.

Wednesday evening, August 24, at 8:30 o'clock, the marriage of Miss Alice Perry ['03] to Mr. B. F. Hill was celebrated at the home of the bride's parents, Mr. and Mrs. S. A. Perry, in the presence of fifty friends and relatives of the bride and groom. Before the entrance of the bridal party, Dr. G. W. Smith sang, "Since Thou Art Mine," and Miss Edith Huntress followed with the beautiful solo, "Without Thee," Miss Lora Perry accompanying on the piano. Reverend Carter read the ring service, the bridal party standing unattended in front of a bank of green with white flowers. The bride was charming in a dainty, white gown of Swiss, elaborately trimmed with hand-made Teneriffe lace. She carried bride's roses. Improvised screenings of green converted the lawn into a beautiful summer garden, with electric lights and Japanese lanterns among the trees. Here, at small tables, decorated with pansies, a two-course luncheon was served by Misses Allie Frederick, Olive Gist, Nelle Wolf, and Lora Perry. The presents were numerous, useful, and beautiful. The bride is one of the most popular of Manhattan's young ladies, in both church and social circles, where she has won for herself hosts of friends who wish for her all possible joy. The groom is also well known in Manhattan and is held in high esteem in both business and society circles by his many friends. He is salesman for the Central Sash and Door Company, of Topeka. Mr. and Mrs. Hill, eluding watchful friends, slipped away for a wedding trip, which will include various points in Nebraska and Missouri, returning by St. Louis. They will be at home on their return at Mr. H. T. Crawford's, on Humboldt street.—*Nationalist*.

The marriage of two of Manhattan's most popular young people, Prof. George A. Dean ['95] and Miss Minerva Blachly ['00], was solemnized at the home of the bride's parents, Wednesday evening, August 31, at half after eight o'clock, Rev. O. B. Thurston performing the ceremony. Promptly at the stroke of the clock Mrs. W. W. Hutto began the strains of the beautiful bridal march from Lohengrin, and the bridal couple entered, taking their places at the east side of the front parlor in front of a bower of white draperies, clematis, and palms. They were attended by Mr. Walter E. Mathewson and Miss Adelle Blachly, sister of the bride. The impressive ring service, accompanied by the soft strains of "Elsa's Dream," from Lohengrin, was used, after which Reverend Thurston introduced "Mr. and Mrs. Dean." Mrs. Hutto then struck the chords of Mendelssohn's thrilling wedding march and the relatives and friends extended their well wishes and congratulations. Mr. Dean was graduated from the K. S. A. C. in 1895, and has since been connected with the Entomological Department of that institution. Mrs. Dean is the daughter of Dr. and Mrs. C. P. Blachly, and has grown to womanhood in this city. By her gentle kindness, loving helpfulness and true womanliness she has won the love of all with whom she has been associated. She has been connected with the College the most of the time since her graduation. The bride was charmingly gowned in white crepe de chene, with chiffon, and carried bride's roses. The bridesmaid was gowned in white and carried pink roses. The parlors were tastefully decorated with palms, ferns, white asters, and clematis, the arch between the parlors having white drapery trimmed with white clematis, while in the center, amid the white and green, a white and-green electric lamp shed a mellow light. Mr. and Mrs. Dean left Thursday morning on the flyer for Topeka, where they will spend a few days, guests of Mr. Dean's parents and friends, after which they will attend the World's Fair. They will be "at home" to their friends after October 15, in Manhattan.—*Nationalist*. During the week preceeding the wedding Miss Blachly was the guest of honor of an almost continuous series of events. A fruit shower was given by Mrs. Dr. Perry and numerous other friends August 24. On August 25 the Misses Johnson and Miss Child gave a thimble party, with interesting variations. August 26 the members of $TS^2 + S^5 + S$ bestowed characteristic attentions upon her and Mr. Dean, and August 27 Miss Lorena Clemons and other members of the C. D. B. society entertained her at the home of Miss Clemons.

In its August number the *Jayhawker* has reached the highest mark yet as a distributor of news concerning alumni. Miss C. Jeannette Perry, '98, has scored a brilliant success as alumni editor. The following items are taken from that number:

Henry Thomas, '04, reports from East Normal, Ohio, where he is in the employ of the Bullock Electric Manufacturing Company. He spent a few days at St. Louis, enroute to East Normal.

Fred E. Rader, '95, will do experiment station work no longer at Sitka, but at Rampart, Alaska.

Helena Pincomb, '01, has accepted a chair of domestic science at Stevens Point, Wis., with a salary of \$1200.

Geo. Martinson, '01, has completed his law course at Leland Stanford University and is practicing in Reno, Nev.

L. B. Bender, '04, began work with the Western Electric Company, of Chicago, August 1, after a visit at the World's Fair.

Florence Ritchie, '04, was in Boulder, Colo., assisting in the domestic science demonstrations at the chautauqua this summer.

Maj. Albert Todd, '72, assistant adjutant general, has again been transferred by the War Department, this time to Governor's Island, New York Harbor.

Minnie Reed, '86, has spent the past year teaching science in the Kamehameha Boys' School, Honolulu, H. T. This is a manual training school endowed for native boys only.

May Secrest, '92, is taking special work in domestic art at Keisten School, St. Louis, this summer, and will return to Columbus, O., for another year, where she is associate professor of domestic art.

E. W. Reed, '92, who recently graduated from the medical school at Ann Arbor, Mich., is now at his old home in St. Clere, and is superintending some repairs and improvements on the home farm.

Lotta Crawford, '02, after graduating from Pratt Institute, Brooklyn, this spring, came to Manhattan and spent a week visiting friends before going to Fort Collins, Colo., where her parents have recently moved.

E. W. Doane, '01, and F. W. Haselwood, '01, are working in a mining camp at Bodie, Cal., this summer. They expect to return to Leland Stanford this fall and graduate in the spring from the irrigation engineering course.

Mr. H. D. Matthews, '04, is juggling with high potential for the General Electric Company, Schenectady, New York. Geo. Fielding, '03, is also at Schenectady and is now "tester" of the largest machines put out by the Company.

O. P. Drake, '03, and Miss Harriet Harter, junior in 1902-'03, were married June 11, at Owatonna, Minn., the home of the bride. Mr. Drake has been teaching in the high school at that place during the past year, but now has accepted a position as mechanical engineer at Rockford, Ill.

From the *Bushton News* of June 3, 1904, we learn the following of Francis Habiger, '99: Francis J. Habiger and Gertrude Klieson were married at the St. Peter and Paul church, at 9:30 A. M., Tuesday, May 31. The happy couple left for a visit in Oklahoma, after which they will take possession of their fine new home a mile east of Bushton.

Historical Society

VOL. 31

NO. 2

THE INDUSTRIALIST

ISSUED WEEKLY BY

**KANSAS STATE
AGRICULTURAL COLLEGE**

♦ ♦ ♦

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Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

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THE INDUSTRIALIST.

VOL. 31.

MANHATTAN, KAN., OCTOBER 1, 1904.

No. 2

KANSAS CEMENT.

KANSAS is known as an agricultural empire—the land that produces bread, milk, meat, and eggs. Its mineral products, though formidable, look small when compared with the hundred million bushels of wheat, the two hundred million bushels of corn, the two million tons of alfalfa, and the twenty million pounds of butter, which the State is capable of producing every year. In its brief career, Kansas has made an agricultural record unparaleled by any other state of similar ambitions. In 1901 one single county of Kansas was credited by the statisticians of the Department of Agriculture with a yield of 6,819,266 bushels of wheat, which was greater than the total output for the same year of all the New England States, with seven additional states thrown in for good measure.

What wonder that among such wealth of agricultural resources the products of the subsoil should have been neglected by the busy Kansan and underrated by his rivals. For several decades the pioneer settlers actually believed that the mining products of their new empire would never amount to anything beyond satisfying the needs of the local stone- and brick-mason. The discovery of coal was greeted with delight, but doubts were expressed that the Kansas output would ever amount to much. When salt was found we hardly believed that the beds of the State could ever meet the wants of the cattle-man of the plains. When lead and zinc were discovered our geologists told us that the find would probably not amount to much. A dozen years ago the total annual output of mineral products amounted to less than ten million dollars. To-day Kansas is waking up to a realization of her splendid inheritance. The State already holds tenth rank among those that produce coal, third rank among those that manufacture salt, third among those that produce gypsum, first among those that produce zinc, and the writer, in common with many others, predicts that a few years will place it first among those that man-

ufacture cement, the Samson among the modern building materials. The conditions for an immense development of this branch of mining and manufacture are so favorable that the above conclusion is anything but visionary.

The cements of commerce are of two different kinds—hydraulic cement and Portland. The first is a kind of lime. When an ordinary limestone is burned and slacked it forms a lime that will become hard if properly mixed with clean river sand. This common lime mortar, however, will not set under water, but will disintegrate in excessive moisture. It was early discovered, however, that certain limestones when burned form a lime that will set under water, and such limes were called hydraulic limes, or hydraulic cements. A cement limestone is one that contains about twenty-five per cent of sand and clay. There are many localities where these can be found, but they usually run so irregular in their composition that they can not be used for making cement; in fact, there are very few places where a uniform cement rock can be found. Fort Scott is the only locality in Kansas where hydraulic cement is being made, though formerly there was a factory at Manhattan, which for several years made about three hundred fifty barrels per day. Fort Scott possesses a very superior cement rock, plenty of it, and located but three feet below a fourteen-inch coal bed. The mill has been in operation since 1870 and has a daily capacity of about one thousand barrels.

The other kind of cement is called Portland, being named after a city in England where a hundred years ago a superior cement was made by burning the chalk and the river clays. Until a few years ago all Portland cement used in this country was imported from Europe, especially from Hamburg, Germany, but at the present America is producing a Portland equal to the best from the old countries. Portland cement is a mechanical mixture of several definite compounds, produced by the proper calcination of finely divided limestone, marl, or other calcareous material, with clay. The limestone or marl supplies calcium, while clay furnishes silica, alumina, and iron oxide. At a temperature of about sixteen hundred degrees, Celsius, chemical action takes place in the kiln, resulting in the formation of cement clinkers composed of calcium silicate, calcium aluminate, and aluminium silicate, and this mass, after it has been properly ground, is the Portland cement of commerce. If the composition in molecule and mass is cor-

rect in this mixture the addition of water by the builder to the finely ground mineral causes crystallization, whereupon the mass begins to harden into rock and continues to increase in strength for several years before reaching its maximum. Purity of raw materials, their correct chemical combination, a perfect system of manufacture, together with experience and scientific accuracy are essential for the production of a high grade of Portland cement.

Until about twenty-five years ago all cements were being manufactured by selecting the rock, throwing it in chunks into kilns similar to the old-fashioned lime-kilns and roasting it there by slow fire from below. The roasted rock was then pulverized in the cement mill, bolted and sacked, or packed in barrels. It took at least eight days to fill, burn and empty a kiln, and the material often lacked the proper calcination. The next step was the introduction of the steel tub kiln for the brick kiln. Later an improved form of side-hill kiln was constructed that permitted the constant filling from the top and the corresponding emptying at the bottom, thus greatly accelerating the production of large quantities. The great steps, however, in perfecting and cheapening cement have been the introduction of the rotary kiln and the substitution of coal dust or natural gas for wood or coal as the firing material.

The discovery, a dozen years ago, in southeastern Kansas of natural gas led to the establishment at Iola, in 1900, of a large Portland cement mill, an enterprise which paid its founders from the start and which has grown to be one of the largest and best known cement factories in America. Over one thousand carloads of material and machinery were brought to Iola for the structure, and the mill is a model for neatness and adaptability for rapid and thorough work. Its capacity is about thirty-five hundred barrels or fourteen thousand sacks per day, and it uses up a thousand tons of pure limestone and clay a day. The substances are mixed in the proper proportion, ascertained by carefully made tests, crushed, and ground into a fine flour. The flour is then conveyed to the agitators, *i. e.*, large cylinders holding nearly a hundred cubic yards each, and is thoroughly mixed in water by revolving propellers. When the material is thoroughly mixed it is carried into the rotary kilns.

These kilns or boilers are huge cylinders, six feet by sixty feet,

lined with fire-brick, inclined slightly downward and slowly rotating. At the lower end are the natural-gas burners that heat the rotating and downward moving mass to about one thousand six hundred degrees Centigrade. Each of the twenty-one rotating kilns has a capacity of about one hundred sixty barrels per twenty-four hours. The burned clinkers are then cooled off and ground once more into a fine flour, after which the material is sacked and shipped. The cost of this cement plant has been over \$1,000,000.

Another Portland cement factory, started last summer in Iola, will have a mill capacity of one thousand barrels per day. A third plant, of at least two thousand five hundred barrels initial capacity per day, has recently commenced operations at Independence. These four mills, after their completion, will be able to produce one-tenth of all the required cement of the country, and other companies are being formed in several of the cities of the gas belt. Equally fine locations with regard to rock, gas and railroad facilities will undoubtedly be found in many counties of this part of Kansas, and there is no danger that there will ever be a possible overproduction of the material.

Portland cement is daily becoming a more important factor in the industrial development of all civilized countries, and its consumption is growing with wonderful rapidity, as the following table will show. In the United States during the five years preceeding 1900 the consumption increased at the rate of about one million barrels annually; during the next two years the increase was four million per annum, reaching, in 1902, the enormous sum of over nineteen million barrels. This, as has been pointed out by statisticians, is a rate that has not been equalled by any other article used by man, and it is due to the multitude of new applications which Portland cement is constantly finding in construction and the engineering arts.

Year.	Barrels.
1880	229,000
1885	704,396
1890	2,275,186
1895	3,987,719
1900	10,868,703
1902	19,136,256

To manufacture this enormous quantity of cement is a problem that this country has only partly solved. From 1880 to 1890 the imports of this article amounted to an average of 876,497 barrels

annually, while for the period from 1890 to to 1900 the imports reached the enormous average of 2,384,457 barrels per year. It seems that Uncle Sam should wake up and make an effort to keep up with the demands in producing an article of such a sure market and such paying prospects. There is no doubt that the consumption of cement will keep on growing. The lamentable decrease of our forest reserves, the substitution of cement for lime in all first-class masonry, the substitution of cement for stone in building railroad bridges and wagon bridges, the great increase of works of irrigation and sewerage, the construction of military fortifications, wharves, etc., make a further rapid increase a positive certainty. We may also add that the consumption of cement in this country is still less than one-third of the amount consumed per capita in many of the European countries. Why should there not be a rapid growth of the cement industry in America, and especially in Kansas?

Work has commenced on President Nichols' new residence near the east entrance to the City Park. The building will be one of the finest in Manhattan. The lower story will be of range stone and the upper of lumber. The main floor will have five large rooms, a reception hall with stairway, rear stairs, pantry, ice closet, etc., and the second floor six large bed-rooms and a bath-room. The basement will be concreted and contain the hot-water heating plant, several coal bins, a laundry room and a water-closet. The large east and west porches will be of a heavy modern colonial style, with broad stone steps and floored with hexagonal tiling. The well-known Tull Building Co., of Manhattan, are the contractors.

The College dairy has moved into its new quarters in the Dairy Hall, and for the first time in its existence it now enjoys plenty of space, light, and fresh air. The creamery room has been painted, a new refrigerator has been built, all the apparatus has been overhauled, and things have been generally shined up. Professor Erf will keep his office and library in the Agricultural Hall, but the dairy foreman will move into the new building. The cheese room will be fitted up for offices for the Farm Department, and the old creamery room is undergoing a thorough renovation process, from which it will emerge as a general agricultural museum. The vat room will be transformed into a general work room.

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	2	Bookkeeping..... A 71	Phys. Geography I..... G 52	Advanced Grammar... A 32	Algebra I..... G 54	Algebra I..... C 13
	3	Algebra II..... A 26 Algebra I..... C 13	Readings..... A 36	Phys. Geography I..... G 52	Bookkeeping..... A 71	Advanced Grammar... A 33
	4	Readings..... A 32	Algebra I..... C 63	Bookkeeping..... A 71	Advanced Grammar... A 33	Algebra I..... G 54
Prep.	5	U. S. History A... A 62	Arithmetic B..... A 63	Grammar B..... W 33		
	6	Arithmetic A..... A 63	Grammar B..... W 33	U. S. History B..... A 62		
	7	Elementary Physiology, F 60	U. S. History B..... A 62	Arithmetic B..... A 63		
	8	Grammar A..... W 33	Elementary Physiology, F 60	Geography..... A 62		
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	2	Chemistry Entomology				
				First Year.		Second Year.
			1	Cooking	Drawing..... A 80	Physiology..... F 60
			2	Cooking	Cooking	Floriculture.... H 26
			3	Cooking	Cooking	Cooking
			4	Drawing..... A 80	Cooking	Cooking
			5	Sewing	Sewing	Dressmaking
			6	Sewing, 10	Sewing, 10	Dressmaking

All Freshman and Sophomore young women must take Physical Training or Music.

All Freshman and Sophomore young men must take Drill, at 2:45 P. M., every day except Saturday.

(1) Classes recite every other day, beginning on Friday, September 23.

(2) Classes recite every other day, beginning on Saturday, September 24.

THE INDUSTRIALIST.

*Published weekly during the College year by the
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Manhattan, Kansas.

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PROF. J. T. WILLARD.....Alumni Editor

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LOCAL NOTES.

Assistant Elling acted as stock judge at the fair at Stockton, last week.

Professor Ten Eyck has bought the Fletcher farm, on College Hill, and moved his family out there.

The Horticultural Department has commenced the work of building gravel roads to the new Auditorium.

During the year ending July 1, 1904, Doctor Mayo made eighty-one trips on State, College and Station work and travelled over 26,600 miles.

News comes from San Francisco that Capt. A. S. Rowan, the former commandant of our College army, has recently taken unto himself a wife.

The Manhattan Electric Light Company reports a growing business. Thirty-five new houses were connected up for electric light during the month of September.

The Horticultural Department has stored a lot of fruit and thirty-five varieties of grapes in the cold-storage room of the city ice-plant, for use by the classes in pomology this fall.

The last ball game of the season was played Tuesday, September 27, by K. S. A. C. and the Manhattan team. The score ran up to 9 to 12 in favor of the College. A good crowd witnessed the game..

Emmit D. Richardson, a senior student, arrived here from Glen Elder, Mitchell county, making the trip of one hundred fifty miles with his automobile in a little over twenty-four hours. This machine is one that he built himself at the College machine-shops.

Miss Eleanor Harris, assistant in the Music Department, has asked the College for a year's leave of absence. She has obtained a scholarship in the Chicago College of Music and thinks that she can not afford to miss the chance for further advancement. Her substitute has not been installed, as yet.

Professors Roberts and Willard attended the International Congress of Arts and Science held in St. Louis September 19 to 24. At this Congress many of the most eminent scientists of Europe gave addresses, and it was probably the most notable gathering of those prominent in the various branches of learning that has ever been held in this country.

Prof. J. H. Whitman, formerly of the K. S. A. C. Faculty, died at his home at Lyndon, August 12, aged 75 years. His youngest son, Major Frank Whitman, was killed in the recent railroad disaster near Pueblo.

Wm. Baxter, who has had charge of the College greenhouses for over fifteen years, has resigned in order to devote himself to his favorite work of floriculture. He has erected a large greenhouse on his suburban place, just south of the College, and expects to supply Manhattan and the neighboring towns with roses, pinks, and chrysanthemums.

The addition to the engineering building is going up rapidly and Contractor Henry Bennett says it will certainly be finished and ready for occupation by January 1. The building will form a new cross wing on the north side of the two-story part of the shops, and will contain a large room for the main wood-working machines, a couple of engineering class rooms, an office, a drafting-room, and a blue-printing room.

Prof. O. P. Hood, formerly of this College, but now professor of mechanical engineering in the Michigan School of Mines, Houghton, Mich., made a two days' visit here early in September. His stay was all too short to visit his many old friends. Saturday evening, September 3, about fifty of them met in an informal way at the residence of Mr. and Mrs. J. T. Willard and had a delightful reunion, most of those present being former students or officers of the College.

The Annual Kansas Firemen's Tournament, held in Manhattan last Wednesday, was a success, though a storm in the evening prevented the completion of the entire program. Fire teams were here from Marysville, Wamego, Blue Rapids, Beloit, Clay Center, Concordia, Solomon, Salina, Ottawa, and Manhattan. The music was furnished by the College Cadet Band in full uniform, under the direction of Ass't Harry Brown. A large crowd of visitors thronged the streets all day, and many of the strangers visited the College.

During the past two months a canvass of the alumni for funds to erect a Young Men's Christian Association building has been in progress. Only alumni outside of the city of Manhattan are being asked to give at this time. The resident alumni will be canvassed during the fall term. At this date (September 12) two hundred fifty-four replies have been received to the letters sent out. Seventy-two subscriptions have resulted so far, and many who were not willing to pledge immediately have promised to do so later. The total amount subscribed is \$2257, an average of a little over \$31 a person. A number of very liberal subscriptions have been made, and on the whole the results of the canvass have been very satisfactory. Not a third of the alumni have been reached so far, and at this rate it can be seen that the amount realized from the alumni will quite materially swell the building fund.—*Jayhawker*.

Prof. W. A. McKeever has lately been granted the degree of Master of Philosophy by the University of Chicago. The professor has earned the degree by faithful work during summer vacations and by correspondence extending through several years, and the INDUSTRIALIST feels like congratulating him on the well-earned acknowledgment of his efforts. Last summer he took a course in Harvard.

Prof. Olaf Valley, the new head of the Department of Music, was born in Noorland, Sweden. After completing the common schools of his town he went to Stockholm, where he took a course in a technical college to fit himself for a mechanical engineer. While here he began his music studies and sang in the church. When he came to Chicago, in '87, he at once became a member of the Swedish Glee Club, and after years of hard work in musical lines went with that organization to Europe, on a concert trip, as their soloist. On his return, he sang in leading churches in Chicago until one day Mrs. Jessie Bartlet-Davis, America's great contralto, heard him and secured for him a number of important engagements in different parts of the United States. Professor Valley is a graduate of the Chicago Conservatory of Music and of the Hinshaw School of Opera and has been a member of the faculty of the former institution for many years. He comes to us highly recommended, and his beautiful contrabass voice and his modest but positive way of handling classes are winning him friends in and out of the College.

Prof. J. V. Cortelyou, the head of the newly established German Department, was born September 19, 1874, on his father's farm at Harlingen, N. J. In May, 1884, the family moved to Ewing Neb., and in 1890 to Omaha. Mr. Cortelyou graduated from the Omaha high school in 1893, and in September of the same year entered the Nebraska State University, where he graduated with the degree A. B. in June, '97. The following year he was assistant principal in the Humboldt (Nebr.) high school, and in '98-'99 held the principalship in the same town. In September, '99, Professor Cortelyou returned to Nebraska State University for graduate work. Taking Germanics as a major and English literature as a minor, he received his A. M. in June, 1901. The same month he took passage for Germany. After a summer spent on the Rhine, in Berlin and in London, Mr. Cortelyou matriculated in the University of Heidelberg. Here he had Professor Hoops, editor of the *Englische Studien*, to direct his major, Professor Braune in Germanics, and Prof. Fritz Neumann in Romance languages. The next three years were spent in Heidelberg, with special work during vacations in Berlin, in the Bibliothèque Nationale at Paris, and in the British museum at London. Professor Cortelyou passed his Ph. D. examination with high honors (*magna cum laude*) last July. He returned in August and the 24th of that month was married to Miss Grace Rushton (A. B. Univ. of Neb. 1900), of Fairmont, Neb. Professor and Mrs. Cortelyou occupy the cottage at 909 Leavenworth street.

ALUMNI AND FORMER STUDENTS.

Stella Fearon, '03, is attending a school of physical training in Boston.

Alice Loomis, '04, teaches four classes in the Preparatory Department.

Dr. Geo. W. Smith, '93, has gone to Kansas City for special study in medicine.

Maude Smith, '04, is acting as substitute teacher in the Douglas school of Manhattan.

Elsie Waters, '98, has returned to take a graduate course in domestic science and chemistry.

J. W. Harner, '00, has reentered College, taking graduate work in bacteriology and kindred sciences.

F. L. Schneider, '01, is attending the Kansas City Veterinary College and expects to graduate this year.

Roland McKee, '00, of Blue Rapids, Kan., will attend College this year, taking a graduate course in horticulture and botany.

We learn with regret that Edgar Arthur Powell, of the class of '96, died of consumption at his home, near Osage City, September 4.

D. M. Ladd, '01, left September 26 for Chicago, where he will take up the study of medicine at the Medical College, University of Chicago.

Mamie Alexander, '02, has gone to Colorado City in the hope that the climate there will benefit her health. She expects to return within a few months.

R. C. Harner, third-year in 1892, has entered the College of Physicians and Surgeons, Chicago, with the expectation of completing the medical course.

R. A. Oakley, '03, came in Sunday night for a few days' visit with old friends. He is on his way from Muscatine, Ia., to Hot Springs, Ark.—*Nationalist*.

F. W. Christensen, '00, will assist in the Chemical Department of the Iowa Experiment Station next year and take graduate study in the Iowa State College.

John Stingley, '94, has left the employ of the Ohio Cultivator Company and is now with the Moline Plow Company, as traveling salesman, at an advance of salary.

W. P. Terrill, '04, has entered the Massachusetts Institute of Technology, where he expects to complete the course in mechanical engineering. He visited the College on his way there.

Harriet (Nichols) Donohoo, '98, mourns the loss of her little son, born August 21, at Lineville, Ia., who lived only two weeks. She has returned with her husband to their home in Tucumcari, N. M.

E. A. Gardiner, second-year in 1892, for a number of years a resident of Florida and more recently employed in Cuba, came home to attend his sister's wedding, and has been visiting relatives since.

N. L. Towne, '04, is family man and gardener in the Boys' Industrial School, at North Topeka. He recently visited in the city and spent a short time at College consulting the library and securing the Experiment Station publications.

Mrs. Ada (Little) McEwan, '86, with her four children, after spending the summer visiting her parents in this city, has returned to her home in Kalamazoo, Mich., where her husband is professor of English literature in Kalamazoo College.

C. N. Allison, '01, of Codell, Okla., with Mrs. Allison (Leonora Eggen, former student), visited the College early in September. Mr. Allison will complete his course at the Central College of Dentistry, Indianapolis, Ind., next winter. At the same time he will assist by giving demonstrations in bridge work and plate making.

Bulletin No. 65 of the Bureau of Plant Industry, on "Reclamation of Cape Cod Sand Dunes," is by J. M. Westgate, '97, assistant in sand-binding work in that Bureau. It treats of various means of protecting land from blowing sand in that exposed region, where wind velocities of fifty and sixty miles per hour are not infrequent, and even seventy-two miles has been recorded.

While at the Louisiana Purchase Exposition in August, Emile Pfuetze, Alice Melton and W. T. Pope, all of the class of '98, spent a very pleasant Sunday afternoon with Nannie Williams, '99. Old times were recounted, classmates and friends recalled and the growth of old K. S. A. C. noted. Many interesting incidents were also related by Mr. Pope, illustrated by views which he had with him.

Will H. Rhodes, student in 1889, has been in correspondence with the College in reference to a Farmers' Institute at Tampa, Marion county, where he now resides. Mr. Rhodes is proprietor of the East Lynn Farm Herd of Imported and American-bred Hereford cattle and Berkshire swine. His herd of Berkshires won the State prize at the American Royal Show at Kansas City two years ago.

A. C. Smith, '97, was in the employ of the Louisiana Purchase Exposition Company, at St. Louis, until about the middle of August, filling a very important position. He was in charge of one of the principal stations for transforming and distributing electricity. He resigned, however, to take a trip to the East with his wife, Mary (Waugh) Smith, '99, and daughter. They, with Mrs. Smith's parents, Doctor and Mrs. Waugh, visited Prof. Frank Waugh, '91, and Alice (Vail) Waugh, '92, at Amherst, Mass., and K. C. Davis and Fannie (Waugh) Davis, both '91, at Menomonie, Wis. Mr. and Mrs. Smith will return to Seattle, Wash.

Geo. F. Thompson, third-year student in 1882, for a number of years superintendent of printing here, and now editor of the publications of the Bureau of Animal Industry, is a prominent candidate for the position of Assistant Secretary of Agriculture. Mr. Thompson is well fitted for this position by birth, education, experience, and sympathies, and he is receiving a gratifying support in his candidacy in all parts of the country.

W. W. Hutto, '91, had the misfortune to suffer the total loss of his residence by fire Sunday morning, September 11. Occurring at this time in the night, but few of the household goods were saved, the most important being the piano and more valuable parts of the library. The cause of the fire is unknown. But for the rain the evening before, the adjacent property of Professor Dickens, '93, would have been threatened if not destroyed.

A. B. Connor, first-year in 1897, is doing a prosperous livery business in Paola. He recently accompanied Margaret Minis, '01, and J. T. Willard, '83, from Paola to New Lancaster to attend a farmers' institute. He spoke with much appreciation of his work here and especially of the kindly interest which President Fairchild took in him and others. Mr. Connor is an example of thousands scattered over the State who, though never graduating, are better men and citizens by reason of their College experience.

Prof. J. B. S. Norton ['96], of Maryland, went to Denver yesterday with his wife [Gertrude Havens, '96], who will take treatment in a sanatorium there, and it is to be hoped that she will continue to improve, as she has done here, where she has been taking the out-door treatment for consumption since May. She is now a great deal stronger than when she came here in May. Professor Norton will return to his work in the Maryland Agricultural College as soon as she is provided for in Denver, where she may remain till spring.—*Nationalist*.

W. H. Edelblute, '92, visited College September 30 for the first time in recent years. He is now living at Rathdrum, Idaho, and is the county surveyor of Kootenai county. This is a large county and the work is such as to require the assistance of three deputies. He is also required to draw plans for all bridges and superintend their construction. The office is a responsible one as well as remunerative. Mr. Edelblute also owns a ranch, upon which he has planted eight hundred fruit trees and produces large quantities of fruit and vegetables.

The marriage of Fred C. Romig [junior in 1903], of this city, and Miss Lou Belle Shirley was solemnized at eight o'clock, August 31, at the home of the bride's parents near Perry. The bride this year completed the short course in domestic science at the College, and is favorably known here. The groom is a clerk in the post-office and is an upright and energetic young man. Mr. and Mrs. Romig are receiving the congratulations and well wishes of all their friends. They will make their home in the recently built C. S. Smith house, on Laramie street between Sixth and Seventh.—*Nationalist*.

A. H. Sanderson, '03, was married Thursday evening, September 15, to Miss Roberta J. Elliott, of Marysville, who has been a teacher in the schools of that city for the past few years. Roland McKee, '00, was best man and Miss Edith Scott was maid of honor. The following details are from the Marysville *Advocate-Democrat*: "The services were very impressive, the ring service of the M. E. church being used and the bride's father giving her away. After the ceremony the bridal party preceded the guests to the Elliott residence, where a reception was held and elegant refreshments served. The happy pair were the recipients of hearty good wishes, and substantial and costly wedding gifts testified to the esteem in which these young people are held. One of the charming features of this occasion was an original poem dedicated to the bride, written by Rev. Thomas Scott, and entitled "Roberta." Each guest received a dainty copy of the poem as a souvenir. The bridal party left for St. Louis on their wedding trip, and on their return will make their home in Center township."

W. T. Pope, '98, who for the past two years has been in Hawaii, came to the United States this summer with the thought that if conditions were favorable he might remain here. But he was tendered his former position with added responsibilities and a corresponding increase in salary, and also an assistant, so he decided to return to Honolulu. After attending the wedding of his brother in Philadelphia, visiting in Washington, D. C., spending a few days at St. Louis, and visiting his relatives in Marion county, Kan., he sailed for Honolulu late in August. Mr. Pope has been in charge of the nature study work and agriculture in the Territorial Normal School, and this year the work in manual training has also been placed under his direction. He is very enthusiastic over his work, in which his artistic ability serves him well. His holidays are spent in exploring the islands, much of the time on foot, and on these expeditions his camera is his constant companion, and his many interesting views make more real his descriptions of the beautiful island, with its volcanoes, forests, snow-capped mountains, and fertile valleys.

The following items concerning alumni are from the *Nationalist* for September 14:

Philip Fox ['97], of Yerkes Observatory, Wisconsin, came yesterday for a few days' visit with his parents, Gen. and Mrs. S. M. Fox.

The Department of Agriculture at Washington has promoted Jesse B. Norton ['97] in the plant industry line, which raises his salary to \$1200 a year.

Prof. J. B. S. Norton ['96], of Maryland, after seeing the World's Fair, called to-day to see his family in Manhattan.

Prof. Geo. L. Christensen ['94], a brother of J. C. Christensen, county treasurer, came to-day for a visit. He is an instructor in the School of Mines at Houghton, Mich.

VOL. 31

NO. 3

Historical Society

THE INDUSTRIALIST

ISSUED WEEKLY BY

**KANSAS STATE
AGRICULTURAL COLLEGE**

♦ ♦ ♦

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

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THE INDUSTRIALIST.

VOL. 31.

MANHATTAN, KAN., OCTOBER 8, 1904.

No. 3

WHAT THE AGRICULTURAL COLLEGE IS, AND SOME THINGS THAT IT IS NOT.*

IN responding to your request for an address on "The Agricultural College and Its Benefits to the State," I scarcely know what to say, in view of the fact that an experience of nearly twenty-five years at the College gives me a knowledge of it upon which I might draw for many hours. In the brief time available I can, of course, not enter into detail.

Notwithstanding the freedom with which College catalogues have been circulated and the numerous articles written upon the institution, there is still much ignorance concerning it. There are many who think that nothing but farming is taught at the College; others who think that nothing but farming should be taught there; many who are surprised that we admit young ladies as students, as well as young men, and many who think that the institution is supported entirely by the State. The College is attempting to occupy the field for which it was founded, and only that. As set forth in the act of 1862, donating lands for Agricultural Colleges, ". . . the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." From this it will be seen that the College was founded to teach not only agriculture, but the mechanic arts and military tactics, and that it is to promote the liberal as well as the practical education of the industrial classes. It is the duty of the institution not only to teach the art of farming, which is not specially mentioned in the act, but to teach such branches of learning as are related to the industries.

*Abstract of an address before the Shawnee County Horticultural Society, at the Silver Lake meeting August 11, 1904, and published at the request of the society.

It is a college, and in this capacity it must make its leading object the teaching of sciences which will enable one to understand and grapple with the practical problems of industrial life. As a college it has also to give the industrial classes a liberal education, by which we must understand is meant an education in topics that may not be of immediate application to the industries, but which apply more to the development of the character and general capacity of the student.

There are many things that the College is not founded for, upon which wide-spread misconception exists. There seem to be many who think that the officers of a State institution must meet the demands of any individual in the State for services that they are capable of performing, and to perform these services free. The Agricultural College is willing to do anything in its power that will be of public benefit, even though brought to its attention by a private individual and the service is not one that is legally required of it, but when a service is of private interest only, a State institution is under no obligation whatever to perform it, and the College officers are so busy with their required duties that, even if willing, they can seldom find time to give this gratuitous service. When such work as chemical analysis is desired for the benefit of an individual, it is only right that he should pay for the time of the person detailed to do the work and for the materials used. As the State develops, the need is becoming more and more pressing for a public analyst, to whom one may apply for chemical analyses of any kind under proper provisions established by law. As it is now, there is no person in the State of whom one may demand such work.

The Agricultural Experiment Station is a department of the College, the purpose of which is frequently misunderstood. The Hatch fund of \$15,000 per annum, received from the United States is for purposes of research to enable new facts and new relations among facts to be ascertained, and the knowledge distributed. It is no part of the duty of these stations to publish bulletins and reports that are merely collections of knowledge ascertained at other times and places. Valuable and proper as such collections are, their preparation belongs elsewhere. By collecting the work done on any single topic at several stations in the United States it is obvious that a much better showing can be made than if one only is considered, and in judging the work of our Experiment

Station or any other, this must be borne in mind. It is our business to make investigations and experiments bearing upon the agriculture of this State, and to publish the results of such experiments that the farmers may be saved the expense of making them for themselves. It is, of course, proper at the same time to compare our results with those obtained elsewhere, but the publishing of matter merely for information, independent of research, at our Station, is no part of our duty. The Experiment Station, being located toward the eastern part of the State, does not in some respects meet the requirements of other parts of the State, in so far as investigations involving climatic conditions are concerned. This difficulty has been met in part by the establishment of the Fort Hays Branch Station in Ellis county, where experiments applicable to regions of deficient rainfall can be more easily executed. The College also has an important substation at McPherson, which is operated in coöperation with the United States Department of Agriculture, and is devoted to experiments with cereals. Doubtless in the further development of the Experiment Station, work will be done in other parts of the State. These, however, must depend upon State appropriations largely, as permanent substations cannot legally be supported by any part of the Hatch fund. The Experiment Station has constantly a number of lines of work under investigation, the results of which are published in bulletins, which are distributed free to all applicants. It must not be expected that a given farmer will be interested in all.

Under the provisions of the Act of 1862 Kansas was entitled to 90,000 acres of United States lands, and actually received 82,313.52 acres. This land was sold to excellent advantage and has provided an endowment of \$491,181, from which an income of about \$24,000 per annum is obtained. In 1890 Congress passed an act for the further endowment of agricultural colleges, by the provisions of which they are now receiving \$25,000 per annum. This money is a part of proceeds from the sale of public lands. In 1887 the Hatch Act was passed, establishing agricultural experiment stations in connection with land-grant colleges, and in accordance with its provisions our College is receiving from the United States, by direct appropriation, \$15,000 per annum. It will be seen, therefore, that the College receives from Federal sources about \$64,000 per annum.

This amount is supplemented by State appropriations. Under the terms of the organic act the State is obliged to furnish all buildings, excepting that five per cent of the Experiment Station appropriation may be used for buildings or repairs. Until recent years the State had made but little appropriation for anything but buildings, but with the very great increase in the number of students and the consequent necessity for a larger teaching force, the State has appropriated funds for special purposes, and for current expenses and equipment, amounting last year to about \$50,000. Although the State has thus responded liberally in the provision of funds for current expenses and the erection of buildings, this has not been in proportion to the increase in attendance. Within the last seven years the number of students has doubled, while the teaching force and the means to hire teachers have increased much less.

In fulfilling its mission as a college, our institution now offers six four-year courses, *i.e.*, agriculture, domestic science, general science, mechanical engineering, electrical engineering, and architecture. The agriculture and engineering courses are for young men, the domestic science for young women, and the general science for both. The first year in each of these is nearly identical, any differences being only such as are dictated by sex. All have certain studies, regardless of future course proposed. All young men get one term of agriculture and three of shop work; all young women, one term of cooking and three of sewing. This first year's work is purposely made general in its character so as to give each student a basis upon which he or she can intelligently make a choice of course at the beginning of the second year. The majority of the students never get beyond the first year. Our arrangement insures that in any event a young man attending the Agricultural College will have had at least one term of agriculture. Many boys just from the farm have seen only the drawbacks of farm life, and come to the College with no appreciation of its possibilities. The term in agriculture is designed to cause them to see this in a better light, to show the intellectual element in it, and thus to win them to rural life. The shop work and drawing are useful to all, and may serve to reveal to a boy a special talent for mechanical work. The sewing and cooking cannot but be a benefit to every girl, no matter what her future course or work.

At the beginning of the second year the student makes choice from among the four-year courses available, and I will again insist that all of these are courses strictly within the purposes contemplated by the act endowing these institutions, even though not all are agricultural. Time does not permit entering into detailed discussion of each of them. The College catalogue may be had for the asking and contains full information. In general, the grand aim of all the courses is to give practice with principles, to teach *why* we do, *how* to do, and to *do*. More than ever before in the history of mankind the people are realizing that education must be in one's work, not apart from it; it is not something to enable one to get above work, but rather to elevate labor so that it will be enjoyable. The educated person who can do nothing but teach other people in such a manner as to make them as helpless as himself is not our ideal, but he who is by his education enabled to do more in the real grapple of mankind with nature.

Consistent with this object we find, in all the courses, practical work *with* things constantly accompanying study *about* them. We have laboratory, field or shop work in botany, physics, chemistry, entomology, zoölogy, bacteriology, physiology, woodworking, blacksmithing, foundry, machine-shop, horticulture, stock judging, dairying, grain judging, surveying, printing, cooking, sewing, laundering, etc.

There are those who think that we should teach only what they are pleased to classify as "practical" branches, to whom study of the sciences seems a waste of time. To such we say that education in the pure sciences is practical, when we allow to this word any proper scope of meaning. Those ignorant of the sciences cannot appreciate this; those conversant with them have no doubt of it. All material progress in the things which all recognize as practical, such as transportation, illumination, generation of power, telegraphy, telephony, etc., rests on progress in the pure sciences. Furthermore, pleasure in living, which is really the one aim of all, is greatly enhanced by an understanding of the processes of nature, industry, and art, even if we do not convert this knowledge into a breadwinning weapon.

The College authorities recognize that, good as it is, there are many who cannot take a four-year course. For such, short courses have been provided in farming, dairy farming, dairying, and domestic science. The teaching in these courses, while no

whit less accurate than in the others, is upon a different plane. Taking students without scientific or mathematical training, the instruction must be more largely a giving of facts, without an elaboration of the underlying principles which the regular courses afford. The work is intensely practical. Studying such texts as any bright young man or woman can understand, receiving lectures of the same type, and putting into daily practice through industrial exercises the facts and principles learned in the classroom, the student cannot but be greatly benefitted. It is hoped, too, that in many cases young people who had thought that they could not afford a four-year course will, by this taste of the advantages and pleasures of an education, be led into the regular courses.

Finally, I wish to call attention to the general atmosphere of the College as one of industry, where labor is not a stigma, where many a student earns his way through College, where students are kept so busy as to have little time for activity that is mischievous or worse. While we are patient and long-suffering with the one who cannot do so well, but does his best, we do not tolerate the one who wastes his time and his parents' money, and interferes with the progress of those who are here to make the most of themselves.

J. T. WILLARD.

WOMAN'S EDUCATION AT THE KANSAS STATE AGRICULTURAL COLLEGE

THE Kansas State Agricultural College was originally founded by the Kansas M. E. church as a classical school, but presented to the State in order to bring the Agricultural College to Manhattan. Its original courses of study and its Faculty, however, remained almost unchanged from 1863 till 1873, when the Board of Regents called the Rev. John A. Anderson, of Junction City, to the executive chair. Professor Anderson, who afterwards became congressman of the north district of Kansas and was reelected five times to this important position, had very radical views about technical education and the comparative value of scientific and classic studies. He effected a radical reorganization of the courses of instruction and, in 1874, issued a pamphlet in which he gave his reasons for the instituted changes. The following paragraphs on woman's education are excerpted from

the pamphlet mentioned and are a fair sample of its common-sense views and vigorous style.

"If viewed from the standpoint of actual instead of ideal life, the course of study followed in the average female seminary will logically appear as a standing wonder. Judging by its points, it evidently assumes that a woman's work mainly consists in discussing literature, smattering French, executing operettas, and attempting to copy paintings without a knowledge of drawing. It assumes that the girl will not marry; or, if she does, that the strain of maternity will not test her constitution; that her children will never be sick; that her family will be oblivious to bad bread, worse coffee, and household confusion; that a flowerless garden will fill her husband with bliss, and a buttonless shirt with ecstasy; and, above all, that she will never, through any adversities or under any conceivable circumstances, be required to perform any possible kind of work! The world for which it prepares her is Dreamland, where the poetic 'Charles Augustus' awaits her arrival that they may sail in a fairy ship over a placid ocean to his castle in Spain, and spend a perpetual youth in delicious wooing while the ceaseless moonlight sifts through overhanging leaves and exotic flowers perfume the air.

"'Charles Augustus' is a fraud! His true name is John Smith. He lives in Kansas and earns every cent by hard labor. He tears his clothes, snores, and eats unlimited quantities of pork and cabbage, which Mrs. Smith may have to cook, and at the same time preserve order among an assorted lot of little Smiths, energetic with mischief and having capacious lungs and elastic stomachs. It is not strange that the seminaries provide the usual course of study, for, like other merchants, they only supply the article demanded by the market. But it is strange that a mother who was herself so educated, and who, as a wife and housekeeper, has keenly felt her own ignorance of subjects that should have been taught, and her want of skill that might have been acquired, can be content to give her daughter the same unreal preparation for that which she knows to be real life.

"Without raising the vexed question of woman's rights—whether the family is her proper sphere, or whether it be as broad as her success in professional and political life can make it—she undoubtedly has a right to be educated as a woman. She has a right to study her own organism and functions, to under-

stand the conditions of health, and to be forewarned against the inexorable penalties of ignorance, folly, or overtaxation. She has a right to instruction respecting the proper care of the sick, for a mother's watchfulness and a wife's tenderness, when intelligently directed, are more potent than drugs in the struggle with death. She has a right to instruction and practice in the art of cutting and making her own clothing tastefully; in the art of cookery; in that of setting a table, brightening a room, beautifying a garden; in short, to all the knowledge which related sciences can contribute to her intelligence, deftness and efficiency in that greatest and purest of womanly arts, the art of making home brighter to the little ones than streets, more attractive to its adults than saloons—a quiet nook whence the pilgrim of three score and ten boards the ship that sails out into eternity's ocean. These are things which men can not perform.

“But can the truths of science which bear upon woman's work be arranged and taught to a girl with direct reference to the use which the woman makes of them, and can the practice by which skill is acquired be given? How shall this be done?”

These sentences were written thirty years ago, and the Kansas State Agricultural College has tried to solve the problem ever since. The Faculty, the Board and the legislature have coöperated in finding a complete and logical solution, and their efforts have been successful. Not only have hundreds of young women been trained to go back to their homes all over the State, to fulfill their mission as daughters, mothers, and sisters, better than they could have done without this training, but dozens of young missionaries of this new education have been sent as teachers to other schools in other states all over the land.

J. D. WALTERS.

DOMESTIC ART AT THE WORLD'S FAIR.

THE ordinary visitor to the World's Fair, with only a limited amount of time, has in view the Fair as a whole. He wants to see a little of everything. One could spend months in studying the exhibits in detail, yet it is possible to obtain a good idea of some particular line of work in the more or less hurried sight-seeing.

Manual training work of all kinds was given a prominent place in the educational building and was exceedingly interesting.

Domestic art in all its branches was shown in many of the state sections, as well as in the exhibits of foreign countries. Norway and Sweden were especially well represented in this work.

The display of the Brookline, Mass., schools showed what could be done, in both plain needle-work and embroidery, by very young pupils. Work done by blind children surpassed in neatness and accuracy much of that done by those who can see, and that of imbecile children showed what training could do for them.

In the Indian building there were classes demonstrating the methods of teaching domestic art in the Government Indian Schools, and showing work done by the pupils. In the Kansas State building there was a beautiful display of fine needle-work and embroidery.

Other things of interest pertaining to domestic art were found in various places. In the English display in the Varied Arts building was machinery at work taking cotton from the bale through all the different processes until it became thread. Silk and cotton cloths were being woven, there being four looms weaving cotton, one making muslin, another striped cloth, and still another weaving a pattern with knots in it. Handkerchief weaving could be seen at every turn, and the design of any building desired could be woven into the pattern. Ribbon weaving and the working of embroidery by machinery were also shown.

In the exhibit of sewing-machines, there were the ordinary machines for home use, those for binding books, for stitching leather, making tents, and one which worked eyelets on tents, at the same time cutting out the cloth. Then there were those intended for factory use, a long row of machines on one long standard. These could be worked by treadle or by other power, and at the back was a trough to catch the work as it was sewed. The attendant in charge said there were over three hundred machines of that make for different purposes.

The hand work on the Paris gowns was exquisite, as was that on the Mexican drawn work. In the glass works, on the Pike, could be seen the process of spinning glass into threads fine enough to be woven, and the material woven from this was very fine and soft. Bulgaria had an exhibit of cloths of beautiful texture and fineness and of rich colors.

INA F. COWLES.

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LOCAL NOTES.

The new addition to the mechanical workshop is ready for the roof.

The Chemistry Department has purchased a calorimeter for experimental work.

The Manhattan city library building, a donation by Andrew Carnegie, costing about \$13,000, is completed and ready for the books.

Many students attended the Sousa concert last Wednesday afternoon, in the Manhattan opera-house, and all report a fine program.

The Chemical Department has recently received a Parr's calorimeter, which will be used in studying the calorific value of fuels and foods.

Mrs. Calvin and Assistant Shoemith attended a farmers' institute at Denison, Kan., October 6 and 7. On his way back Mr. Shoemith acted as corn judge at the Holton county fair.

Rev. Elbridge Gale, of Magonia, Florida, professor of horticulture at this College, 1870-'78, sends us a clipping from the *Florida Tropical Sun* as a proof that he is still interested in horticultural investigations and horticultural meetings.

Fresco Painter A. Ohst is working hard on the interior of the new auditorium. The ceiling will be completed in four or five days, permitting the removal of the extensive scaffolds, after which the main floors will be laid and the stairs will be completed.

Professor Ten Eyck and family expect to leave for the St. Louis Fair October 10. The professor has an engagement to lecture there October 11, at the "Out-side Agricultural Exhibit," on the subject, "Drouth-resisting Crops." He will use the lantern and deal more especially with root development.

Hon. A. Jones, master of the National Grange, in his report of a recent visit in Kansas, says: "I commend the coöperation of the Kansas State Agricultural College and the Grange, and earnestly hope every Patron will see to it that their sons and daughters, so far as possible, shall have the benefit of a full course at this splendid school; and I trust none will, for a moment, underrate the very great value of such a course for their daughters in the domestic sciences."

Contractor Geo. E. Hopper, of the College waterworks, is here to complete the water plant. He hopes to supply the institution with water in a few days. Everything is in shape except the painting of the water tower, a few repairs of the pumping station, and the proper adjustment of the pump and the dynamo.

Professor Erf, who was here during the past week, returned last Monday to the World's Fair. He selected seven hogs from the College herd, which were shipped by express to St. Louis, this being the time when hogs have the lead in the stock show at the World's Fair. These hogs have been fed a one-fifth ration of cottonseed-meal to determine the merits of this kind of feed and what proportion of cottonseed-meal will prove the best.

Professor Walters has moved into his new house, on Bluemont Avenue, between Fourth and Fifth streets, and offers his suburban home, where he has lived for twenty-seven years, for sale. Containing about four acres of land, a substantial, large, stone house, stone barn, poultry house, etc., the latter place would make a fine home for a retired farmer or a family that wishes to locate near the College to educate children. The place is outside the city limits, but lies within a short distance of the College and is in the Manhattan city school district.

Last spring before Professor and Mrs. B. S. McFarland left for Olathe to spend their summer vacation, the professor planted a few hills of pumpkins in his garden. During June the vines were only a few inches long; but seeming to realize in July that their master was gone, they started to roam over alley, fences, outbuildings, and neighboring streets and lawns. During August these same vines became the wonder of the neighborhood, for it seemed they had gotten beyond the restraining power of even the marshal. When Professor McFarland arrived here in September he was surprised to find himself the owner of pumpkins enough to make pies for the entire College Faculty from now until New Year. During the past two weeks he has spent his spare time enumerating them and hopes to complete the count to-day.—*Nationalist*.

The thirty-five hundred pound steer arrived here last week from his visit to the World's Fair, and is at home again to his friends at the College stables. Professor Erf, who had direct charge of the exhibit of which the steer was a part, was told again and again about this and that animal that would be sent to the Fair to outweigh "our big steer." Several large animals came, but the largest weighed twenty-eight hundred, thus falling short over six hundred pounds. The steer was the greatest attraction at the stock show. Crowds of people were about him all the time. Various theories were advanced by the onlookers to account for his remarkable size. One of the Fair commissioners from an eastern state refused to believe Professor Erf's story about his weight, and claimed the animal was stuffed and that it was a shame to pass off such a fake on the people. Finally Professor Erf proposed to lead the steer out into the open air and

have the doubter make a thorough examination. This being done the crowd cheered, Professor Erf smiled, the "wise man from the east" apologized and slipped away, and the "big steer" went on chewing his cud, thus stuffing himself in the same old way.—*Nationalist*.

The following promotions have been made in the College battalion as a result of the recent examination: Quartermaster Sergt. H. W. Baker to be captain and quartermaster. First Sergt. Earl J. Evans to be first lieutenant and adjutant. Sergt. F. O. Hassman to be sergeant-major. First Lieut. A. N. H. Beeman to be captain of Company A. Second Lieut. C. H. Withington to be first lieutenant of Company A. Sergt. L. E. Hazen to be second lieutenant of Company A. Sergt. Grover C. Kahl to be first sergeant of Company A. Sergt. Maj. W. W. Buckley to be captain of Company B. Sergt. L. J. Munger to be first lieutenant of Company B. First Sergt. Harry Heim to be second lieutenant of Company B. Second Lieut. F. E. Balmer to be captain of Company C. Second Lieut. Fred Van Dorp to be first lieutenant of Company C. First Sergt. W. H. Ijames to be second lieutenant of Company C. Sergt. John Calvin to be first sergeant of Company C. Second Lieut. Claude Thummel to be captain of Company D. First Sergt. E. A. Cole to be second lieutenant of Company D. Sergt. E. F. Patee to be first sergeant of Company D. Examination of privates for the position of corporal were held last Friday.

ALUMNI AND FORMER STUDENTS.

Bessie Mudge, '03, has returned to take graduate work in domestic science, bacteriology, and chemistry.

J. J. Biddison ['04], who began work last Thursday as reporter for the *Topeka Daily Herald*, has been assigned to both local and "scissors" work on the railroad department.—*Nationalist*.

J. W. Fields, '03, called at the College last week on his way to Kansas City, where he will enter the Western Dental College. He has a position as teacher of chemistry which will enable him to pay his expenses.

Born, September 29, twins, a boy and a girl, to Mr. and Mrs. A. R. Brown, of Russell. Mrs. Brown is a daughter of Mr. and Mrs. J. B. Haney.—*Nationalist*. Mrs. Brown was Grace Haney, second-year student, 1901.

Rev. A. D. Rice ['92] was transferred at the recent meeting of the Kansas M. E. conference to the Nebraska conference north of us, and appointed to the pastorate of the M. E. church at Strang, Fillmore county, Nebraska.—*Nationalist*.

Jennie (Smith) Strong, '94, recently of Kinsley, with her little daughter, has been visiting her parents in this city. In the future her residence will be Ottawa, where her husband has been called to the pastorate of the First Congregational church.

Homer Derr, '00, is teaching in the Central State Normal School of Michigan, located at Mt. Pleasant. He assists in the department of physics and mathematics. He is enjoying his work and environments very much. He will do some studying as well as teaching.

H. E. Moore, '91, who is the moving spirit of the Watonga Creamery Company, of Watonga, O. T., has issued a little pamphlet called "Cow Talk," designed to interest the farmers of his region in the advantages of dairying, and to give instruction by means of which success can be attained. It is written in a taking way and should accomplish its purpose.

F. A. Waugh, '91, professor of horticulture in the Massachusetts Agricultural College, at Amherst, is the author of an interesting article on "Tank Development" which appears in the September number of the *Photo-Era*. In this he tells how a batch of plates may be developed together in ten or fifteen minutes instead of one at a time. Professor Waugh is also the author of an important article on "Harvesting Apples," which is issued as a bulletin of the Massachusetts Board of Agriculture, and is illustrated by a number of simple but clear cuts.

H. O. Smith and Miss Martha Fox were quietly married at high noon yesterday [September 20], in St. Paul's Episcopal church. Rev. Burck officiated. None but immediate relatives were present. Mr. Smith is a graduate of the department of pharmacy at the State University and is a successful druggist in Topeka. The bride is a daughter of Gen. and Mrs. S. M. Fox. She graduated in 1897 from the K. S. A. C., and for the past two years has been employed in Christ's hospital in Topeka. They left on the noon train yesterday for Topeka, where they will make their future home.—*Nationalist*.

The relatives and friends of Attorney Thomas Eddy Lyon, K. S. A. C. 1893, will be interested in the fact that he has taken unto himself a wife. The following paragraphs were taken from a Champaign, Ill., paper: "A wedding of more than ordinary interest was that of Mr. Thomas Eddy Lyon, of Springfield, and Miss Lela Milmine Smith, which took place at 4 o'clock Thursday afternoon at the First Methodist Episcopal church in the presence of a large congregation. A wedding luncheon was served in the evening to relatives, the members of the bridal party and out-of-town guests at the parsonage. Mr. and Mrs. Lyon will take a short trip before going to their home at Springfield, Illinois. The bride is the eldest daughter of Dr. and Mrs. W. A. Smith. She is a graduate of the Woman's College at Jacksonville and of the school of music of Illinois Wesleyan University at Bloomington. For a year or more she was organist at the First Presbyterian church in this city. Mr. Lyon is a graduate of the college of law of the University of Michigan and for a number of years has been practicing at the state capital. He is rated by his acquaintances as a capable and successful attorney."—*Nationalist*.

F. W. Christensen, '00, has been appointed to an assistantship in chemistry at the Pennsylvania Experiment Station. His work will be in connection with the experiments in animal nutrition, with the respiration calorimeter for cattle in use there. Mr. Christensen is a very capable and industrious young man and we shall expect him to succeed well in his new position.

Royal S. Kellogg, '96, forest agent in the Bureau of Forestry, is the author of bulletin No. 52 issued by that Bureau. Its title is "Forest Planting in Western Kansas." It is beautifully illustrated and gives the results of many observations upon the planted timber of western Kansas. It properly takes a conservative view concerning the climatic effects of tree planting, but sets forth effectively the manifold advantages attending it. Advice is given concerning the suitability to various purposes of the limited number of varieties available.

One of the most beautiful weddings of the season was held at the First M. E. church in this city Wednesday evening, September 28, when Howard N. Rhodes and Miss Wilma G. Cross were united in marriage. The church was decorated in palms, ferns, asters, and nasturtiums. Promptly at 8 o'clock Mr. R. H. Brown played Lohengrin's wedding march, after which Mrs. Silkman sang, "O Promise Me," in her beautiful manner, and at the close of the song the parlor doors were thrown open and, to the strains of the wedding march, the bridal party, consisting of the ushers, flower girl, ring bearer, bridesmaid, best man, and bride and groom, proceeded up the aisle and were met at the altar by the Rev. W. C. Hanson, who performed the ring service in a most impressive manner which united the lives of two young people for better or worse. During the ceremony the organist played softly "Annie Laurie." After the ceremony, the bridal party, relatives and friends received congratulations in the church parlors. The bridal party consisted of ushers, Messrs. Karl Hofer and Frank Snodgrass, Misses Vera McDonald and Mary Davis; flower girl, Agnes Handlin; ring bearer, Alta Handlin; bridesmaid, Mamie Helder; best man, Milton Snodgrass. The bride and groom were recipients of many beautiful and useful presents of linen, silver, fine china, and many other things, notable among them being a lovely chair from members of Manhattan Circle L. G. A. R., and a water set from Department President L. G. A. R., Mrs. Wible, of Ottawa. Mr. Howard Rhodes has grown to manhood in Manhattan, is a graduate of the class of '96, K. S. A. C., has occupied a number of positions of trust in the business life, being assistant postmaster at one time. At present he is holding the position of clerk in the freight depot of the Union Pacific railroad and is held in highest esteem by his employers. Miss Cross is also a graduate of K. S. A. C., class of 1904, and during her stay in our city has endeared herself to all her classmates, teachers and associates. May a life of happiness be in store for these young people is the wish of all friends. Mr. and Mrs. Rhodes left on the 9:25 Union Pacific train for Denver and other points of interest in Colorado.—*Nationalist*.

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THE INDUSTRIALIST.

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No. 4

THE ORDERING OF MATERIAL FOR AN ORATION.

IN an article in No. 31 of the last volume of THE INDUSTRIALIST I discussed the processes of gathering material for an oration. After this work has been completed, the prospective speechmaker must solve the problem of putting the material so accumulated into proper form for advantageous use. In other words, he must make, on the basis of his gathered material, a framework or skeleton of the structure he purposes to build. The various steps of this process may be intimated as follows:

I. A PROVISIONAL ANALYSIS.—After he has thoroughly thought through his subject, as before explained (Vol. 30, No. 31, p. 492), and has taken notes covering the results of his thinking, the maker of a speech should pass these notes under the closest scrutiny. As a result of such critical examination he will find that his knowledge and ideas, as thus indicated, can be combined into a few more or less homogeneous and clearly defined groups. Let him formulate for these groups general statements, under which the various items can be included. So he will build up a plan of his discussion that will be of great value, indeed altogether essential to the highest success, in the subsequent labor of further accumulation of material and development of his discourse.

The plan, as thus made, will be, of course, provisional, subject to modification as the result of the further work of reading and conversation. After these processes it should be put into the best form possible, and stated so fully and suggestively that the speaker can then give his powers entirely to the work of composition. Then let him hold to the plan thus formulated from beginning to end. If this work be adequately done, no helpful ideas will be likely to crowd upon him in the heat of the discourse that may not be appropriately included somewhere in this plan.

II. STATEMENT OF THE PROPOSITION AND OBJECT.—The nature of the proposition was discussed in a previous article. Al-

though this element in the plan comes properly at the close of the introduction, it is really the first part of the plan to be formulated after the gathering of the material. The general method of developing the proposition from the subject has also been previously considered. As it is desired to make these articles as practical as possible, it may be helpful to choose a subject, and illustrate the process of plan-making by actually working out a plan of discourse on that subject.

As a working basis, then, for the development of a plan, let us assume a subject already suggested (Vol. 30, No. 25, p. 393), "The College Settlement." From this subject was derived the theme: "The College Settlement as a Sphere of Usefulness for Educated Men." This theme, turned into proper form for the "object," would be, say: "Let Educated Men Engage in College Settlement Work."

III. PLAN OF THE DISCUSSION.—We are now ready to plan the discussion. This will be developed in response to the question: "How may I, out of the material gathered in the processes of thought, reading, and conversation, so expound, establish or enforce my proposition as best to accomplish my object? The answer to this question will have been partially reached in the provisional analysis above mentioned. A fuller answer must now be found.

Returning to our proposition, we begin to question it: "Sphere of usefulness? Usefulness to whom?" And we conclude that it would be "useful" to those among whom such work was done—useful to them as individuals, as members of society, and as citizens. So it would be "useful" to the community and to the state, as well as to individuals. But we conclude that such work would be "useful" to those, also, that engaged in it, as well as to others. But "useful" in what particulars? And we reason that it would be beneficial to the poor, in teaching them industry, in teaching and exemplifying the principles of economy and thrift, in doing away with certain prejudices, in making them more intelligent and more moral, in leading them to help themselves and one another; that it would help the community and the state as a result of thus elevating the people so affected; that it would be "useful" to the worker, because it would bring him into practical relations to and sympathy with the poor, the ignorant, the vicious—because it would ennoble and broaden his character, by

cultivating the spirit of unselfish devotion to and helpfulness of others—that it would thus in every way bring him to an experimental appreciation of the great truth of human brotherhood.

We reason, further, that such service would be “useful” in honoring God—in its spirit, in its purposes, and in its results.

But why “a sphere of usefulness for educated men?” And we answer, because “college settlement” work was especially designed by and for such men; because it needs men of large intelligence and training to appreciate and help solve the problems with which such work has to deal; and because by thus bringing the extremes of culture and ignorance into common interests, the purposes for which the enterprise was inaugurated will be best advanced.

By examining these and other results of thought and study concerning our proposition, we find that they can be grouped under three or four general classes of motives. There are motives of personal advantage, or duty to self; of duty to others in their individual and associated capacities; of duty toward God; and there is the motive arising from the fact that education peculiarly fits one for the appreciation of and usefulness in this kind of work.

A little further analysis enables us to combine all these motives in the following manner:

Discussion.—College Settlement Work:

1. Promotes social and political reform (*a*) by diminishing poverty and encouraging thrift; (*b*) by diminishing crime; (*c*) by increasing intelligence; (*d*) by elevating morals; (*e*) by promoting the spirit of brotherhood.

2. Encourages highest aims and cultivates the noblest character (*a*) in those with whom such work is done; (*b*) in the workers themselves.

3. Appeals especially to educated men because the power and possibilities for usefulness which education gives imposes peculiar obligations.

It will be noticed that the divisions of the above discussion are the result of several processes, which may be stated in the following maxims: (*a*) Write down briefly, as the result of all your labor of gathering material, the facts and thoughts that seem to promote your object; (*b*) examine the value of these facts and thoughts by asking if they will really promote your object; (*c*)

combine these statements into expressions that are coördinate in both substance and form and that, together, establish your proposition and so promote your object; (d) arrange these coördinate statements in such order as most effectively to promote your object.

These processes should secure for the discussion: (a) Unity on the basis of the proposition; (b) divisions of equal rank as related to the proposition and clearly distinct one from another; (c) climax of effect in attaining the object.

IV. PLANNING THE CONCLUSION.—The conclusion may consist of:

1. A summary of the several divisions that make up the discussion. If this method be pursued, the recapitulation should not be so formal as to involve loss of interest and thus weaken the effect. As the design is to persuade, the conclusion should be the strongest, the most impressive, the most moving part of the whole speech.

2. The conclusion may consist of an amplification of the final point of the discussion. As in some respects the most important division, this part of the speech may often be very effectively emphasized, illustrated, and enlarged upon for the closing impression.

3. An excitation of emotion as the outcome of what has preceded. The impassioned peroration is often very effective, especially if it has been preceded by an earnest, thoughtful, closely reasoned, elevated discussion.

4. An incitement to action as the outcome of the sentiments aroused by what has preceded. The appeal to the will, however, in this degenerate age, is more likely to saturate and pervade the speech than to come formally at the end as was once the custom. Now and then, however, when the audience is aroused or when circumstances favor or perhaps demand action, it is advisable to press the thought home and ask the hearers to their face: "What are you going to do about it?" with the assurance that self-interest, or duty, or shame, or indignation, or some other sentiment will compel them to do something.

5. A combination of two or more of these methods.

Returning to our model plan, we conclude that a full discussion of the points outlined would be weighty and possibly extended. If so, it will be advantageous to refresh the memory of the hear-

ers by a brief recapitulation. If, also, the college settlement affords a field for such noble service, it is important that many college students and graduates enter such service. So we may have as our

Conclusion.—Recapitulation, followed by an expression of the hope that every institution of learning will soon send out men and women to engage in such work.

V. PLANNING THE INTRODUCTION.—The introduction should ordinarily be the last part of the discourse to be planned. The body of the speech must be definitely determined, the speaker must know what he is to introduce before he can gracefully and with directness introduce it. To survey the best path through the wilderness, the engineer must know the objective point—the place he desires to reach.

The general nature of the introduction has already been considered (Vol. 30, No. 18, p. 280 sq.). We have seen that its purpose is to lead the hearers as directly as possible to a docile consideration of the proposition, and that to accomplish this purpose it may consist of an effort to make the audience (a) *familiar* with all that is necessary to an understanding of the discussion; (b) *well-disposed* toward the speaker; (c) *well-disposed* toward the theme.

On examining our discussion we discover that we have been talking about a subject that may not be particularly familiar to even the average college student. Hence the introduction may properly include an "explanation" of college settlement work. The question also arises: "Why has such work been instituted?" This question warrants a reference to the evils that result from the conditions of the poor in large cities and so serve "to render the hearers well-disposed" toward any effort designed to mitigate those evils. So we have, as the outline of our introduction leading to the proposition, a brief reference to the existing evils and a brief explanation of the proposed remedy.

Thus we have traced the general process of preparing a speech up to the completion of a plan. The result appears as follows:

I. INTRODUCTION.—

1. *Evils of poverty in large cities.*
2. *Explanation of College Settlement work as a proposed remedy for these evils.*

II. PROPOSITION.—*The College Settlement as a sphere of usefulness of educated men.*III. OBJECT.—*Let educated men engage in College Settlement work.*

IV. DISCUSSION.—

1. *College Settlement work promotes social and political reform:*
 - a By diminishing poverty and encouraging thrift;*
 - b By decreasing crime;*
 - c By promoting intelligence;*
 - d By elevating morals;*
 - e By cultivating the spirit of brotherhood.*
2. *College Settlement work encourages the highest aims and cultivates the noblest character:*
 - a In those among whom such work is done;*
 - b In those by whom such work is done.*
3. *College Settlement work appeals especially to educated men.*
 - a Education gives power;*
 - b Education opens possibilities;*
 - c Education imposes peculiar obligations toward those who are less fortunate.*

V. CONCLUSION.—

1. *Summary and appeal.*
2. *May all institutions of learning soon send out men and women to this noble work.*

The above is the plan of an oration actually prepared by a student. It is given here not as an ideal plan, but rather to illustrate, in as informal a way as can easily be done on paper, the general processes of gathering material and of putting that material into form as a guide to the speaker in the work of composition.

The plan is, of course, primarily for the use of the speaker himself. The question as to how much of it shall appear in the finished production as pronounced to an audience has already been considered (Vol. 30, No. 25, p. 399). Since it is primarily for the use of the speaker, he should go carefully through the finished plan and note in their appropriate places, with fulness sufficient to guide him, all illustrations, examples, striking phrases, allu-

sions and figures, that he may retain them for the most effective use when developing his outline.

It should be said that, since the "object" is simply the proposition put into the imperative form, it is not essential to write both in the completed plan as is done above, although there is sometimes an advantage in having both forms before the eye.

PRACTICAL SUGGESTIONS.—1. The student will find it helpful as a training in logical and oratorical thinking to choose subjects capable of oratorical treatment and develop plans of speeches according to the methods above suggested. 2. Constant practice in the making and rigid criticism of plans will be found of inestimable value as a means of developing the inventive and logical powers. Without shrinking, he who would become a master of this greatest of all arts must put the results of his labor to the test, must subject the products of his mining to the crucible of the most pitiless criticism. Is the subject itself a good one? Is it fresh, appropriate, interesting, important? Is the proposition legitimate? Is the "object" properly stated? Are the divisions of the discussion relevant? Do they overlap one another or are they mutually exclusive? Are they well stated? Are they coördinate in thought as related to the proposition and coördinate in form as related to one another? Are they cumulative in effect? Do they severally and unitedly help further the object? Do they include all they should? Do they exclude all they should? Is the conclusion the best possible? Is the introduction brief, natural, graceful, pleasing, interesting? How might the plan be improved? Such are some of the questions that the speechmaker should ask himself in the criticism of his plans. A large amount of this kind of work may be done to advantage. Such exercises develop both the critical and constructive powers, and serve to quicken and enlarge wonderfully what may be termed the logical and oratorical instinct.

The motives set forth in the discussion above outlined are, of course, not to be considered as including all possible motives. Oratory, as the all-inclusive and most complex literary type, is not confined to one form. Rational beings, presumably, will not act with reference to a given question until they understand that question—they must be enlightened. But they must also be satisfied that the proposed action is true, or wise, or right, or of advantage, or duty—they must be convinced. But they may be

convinced and yet not be moved to action. Their emotions may need to be stirred, their feelings kindled, their imagination awakened, their passions aroused—they must be excited. That is, the orator may need to use all the motives of enlightenment, conviction, and excitement, in order to persuade his hearers. He plays upon the whole gamut of human nature, covering the entire range of intellect and sensibilities that he may awaken the will to action. Consequently, he may have occasion to employ all forms of discourse—exposition, argumentation, narration, description, as well as persuasion proper.

It is not the province of these studies to enter into details and give many specific rules for the employment of these various literary types. All those matters may be found discussed in the rhetorics. The present purpose is, rather, to present general principles, point out fundamental processes and make practical suggestions that have been found invaluable in the actual work of making speeches.

CLARK M. BRINK.

THE FOURTH DIMENSION.

THE modern tendency to generalize has led mathematicians to extend the notion of three-dimensional space and to define spaces of more than three dimensions with the view of employing these definitions as useful means of investigation. It has not been a part of their purpose to require belief in the real existence of a four-dimensional world. They have regarded the extension as affording a convenient expression of truths applicable to geometry and to algebra operating with more than three unknown quantities.

The concept of dimension demands our attention at the outset of the discussion. On this point much confusion of ideas exists. Most text-books on mensuration state that every body has three dimensions—length, breadth, and thickness. This does well enough for a rectangular box, or some similar structure in which three principal directions are clearly distinguishable, but lacks definiteness in the case of an apple. Sharper distinctions are therefore necessary in order to bring out a universal definition.

A familiar instance of an object possessing but one dimension is a straight line. The position of any point thereof is determined by stating how far it is removed in one or the other direction from some given fixed point of the line, just as is done in the case of the thermometer. Time is another illustration of a one-dimensional concept. Assuming the year of the birth of Christ as the zero point of time, and the time subsequent as the positive direction

thereof, then a single number is sufficient to establish any definite point of time. Hence the following definition—every totality or system of infinitely numerous things is one dimensional in which one number is all that is requisite to determine and mark out any particular one of these things from among the entire totality.

In harmony with the ideas which lie at the base of this definition we pass to totalities where two or more numbers are necessary for the determination of any particular individual thing. The fundamental idea of analytical geometry was suggested to Des Cartes by referring the position of any point in a plane to two intersecting axes. The idea of coördinates, which brings geometry and algebra into such close correspondence, has been put to extensive practical use in many different fields. The surface of the earth is at once recognized as a two-dimensional aggregate of points, latitude and longitude supplying the two requisite determining numbers. Similarly, the world space in which we live is three-dimensional, since any point thereof is uniquely determined by three numbers having direct reference to a fundamental axial system of three intersecting planes. Without further illustration, the following general definition may be proposed: *An n -dimensional totality of infinitely numerous things is such that the specification of n numbers is necessary and sufficient to indicate definitely any individual amid all the infinitely numerous individuals of that totality.* It is to be said in this connection that examples may be given of higher systems involved in this definition, but none of them are capable of concrete representation to the eye.

The science of mathematics owes its progress largely to the application of the following principle: The extension of any notion is admissible provided that such extension does not lead to contradictions with itself or with results which are well established. No one can picture to himself "minus three potatoes," yet there is no hesitation in extending the notion of number from positive to negative. In a similar way the mathematician is justified in enlarging the idea of space as a point aggregate of three dimensions and in introducing the notion of space of more than three dimensions as an instrument of research.

As a matter of fact, the introduction of the generalized notion of space has proved of service to mathematical research. This is apparent in the first place with respect to algebra. Algebraic questions involving three unknown quantities, x , y , z , admit of geometrical representation to the eye. It is a natural extension to employ geometric forms of speech in the consideration of more than three variables. But in doing this we are really assuming

the idea of space of more than three dimensions. By conceiving all possible variations to the four quantities, x, y, z, w , we arrive at the corresponding notion of a four-dimensional aggregate of points. However, although this notion is convenient it is not indispensable to the progress of algebra.

But the most important service rendered by the enlarged conception of space lies in the field of geometry. The point of view held by many mathematicians of the present day regarding the axioms of geometry is, that they are not undeniable laws of thought, but rather deductions from experience. In particular the eleventh axiom of Euclid has been shown true in the world space as we conceive it, but three dimensioned spaces are ideally conceivable though not capable of mental representation where the axiom does not hold good. It has been proved that the axioms of Euclid are either all or partially false in geometric systems in which curved surfaces and not fixed planes are studied. The discussion now turns on the nature of the space of our experience. If it has zero curvature like the plane, then Euclid's system stands in its entirety; if it possesses a curvature, however slight, then part of the system falls. As to what we are warranted in saying about the measure of curvature of experiential space, mathematicians are not agreed. Now, these considerations lead to the notion of n -dimensional spaces in the following way: The criticism of the fundamental hypotheses of geometry bring about a comparison between the space of experience and other three-dimensional spaces. But the latter itself is an ideal conception and suggests at once, by generalization, the abstract assumption of space of any number of dimensions. This generalized conception has thrown new light on the truths of ordinary geometry.

Arguments have been put forward to prove the existence of a four-dimensional space containing the world in some such way as the space of experience contains a plane. It is obvious, however, that reason can not ascend to the point of demonstrating a four-dimensional material actuality, inasmuch as our senses can only have three-dimensional experiences. The only existence that can be safely affirmed is that of the intellectual idea.

Considerable recent literature exists on the subject of four-dimensional space, a worthy share of which is a contribution from American mathematicians. Six possible forms of regular bodies in four dimensions analogous to the five regular polyhedrons in ordinary space have been discovered. Their properties have been discussed by Professor Stringham, of the University of California.

B. L. REMICK.



The Thirty-five Hundred Pound Steer.

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LOCAL NOTES.

Mid-term examinations, Saturday, November 5.

Prof. D. E. Lantz advertises in the Manhattan papers for two or three live coyotes.

The new smoke-stack of the Horticultural office and greenhouse is being put in place this week.

President Nichols addressed the students at the Y. M. C. A. building last Sunday afternoon.

Professor Valley has rented the Rehfeld house, at 520 Osage. His family will be here about November 1.

Miss Mildred Shaw, assistant in the Mathematical Department last year, is teaching in Washburn College, at Topeka.

A Marshall county club was organized last week, having an initial membership of thirty-four. Good for Marshall county.

Professor Dickens has gone to St. Louis to see the big show and to attend the meetings of the North American Pomological Society.

Professor Eyer and sixteen of his senior students in electrical engineering will go to Kansas City, Monday, October 17, to visit the electric power plants of that metropolis. They intend to return on Tuesday evening.

Miss Cecilia Augspurger, the new assistant in music, arrived Sunday from Farmer City, Ill., and began work on Tuesday. Miss Augspurger will confine her work chiefly to piano teaching, *i. e.*, she will do the work formerly done by Miss Harris.

President and Mrs. Nichols gave a reception on the evening of October 8 to the Faculty and assistants. Professor Valley gave a number of vocal solos, accompanied by Assistant Brown on the piano. Light refreshments were served. All appreciated this opportunity to get acquainted with the College family.

The girls who are taking gymnasium work this term have had all their measurements and tests made and are beginning regular work. The classes now meet every day instead of twice a week, as formerly. The department has purchased twenty-five more pairs of Indian clubs and will make a speciality of this line of work. A rowing machine may be added later. Gymnasium work is necessary to a well-rounded college course and should not be neglected by the girls.—*Student's Herald*.

Professor Eyer is on the program of the seventh annual meeting of the Kansas Gas, Water, and Electric Light Association, at Leavenworth, October 18 and 19.

The big Agricultural College steer which astonished the visitors at the World's Fair two weeks ago will go to Kansas City on October 17 to 27 to take part in the Annual American Live Stock Show. His royalty, weighing now about thirty-five hundred pounds, will stand alongside Lord Midget, a steer of the same age but weighing only two hundred twenty-seven pounds.

The advanced class of the domestic science short course numbers twenty-three students. It is gratifying to see so many of these young women return for a second terms' work, especially since the two terms are a year apart. There is a probability that another second-term class will be organized next winter, so that the members of the first-term class can complete their course during the present school year.

Prof. A. Emch, of Colorado University, formerly of this College, sends us a reprint from the *University Colorado Studies* containing a sixteen-page article on the "Theory of Compound Curves in Field Engineering." The professor is at present reading the last proofs of his new text-book on "Projective Geometry," which is being published by the John Wiley Publishing Company, of New York. His book will be the first text-book on modern projective geometry published in America.

About three hundred students attended the social given at the Methodist Episcopal church Monday evening. Little booklets were used to facilitate the getting acquainted. Each person was given a booklet and pencil, with instructions to pass around and have others write their names in the book. This proved very helpful. Rev. W. C. Hanson, Miss Ada Rice and Prof. R. R. Price made short but pleasing talks. Professor Valley, accompanied by R. H. Brown, sang two solos that were very highly enjoyed.

The athletic teams of the College are doing good work this term, and the outlook for victories in the arena is better than usual. The following games are scheduled for the remainder of the fall: October 14, Fairmount at Wichita; October 15, Friends University at Wichita; October 22, St. Marys at St. Marys; October 28, Bethany at Manhattan; November 5, Washburn at Manhattan; November 12, Fort Riley at Fort Riley; November 18, K. U. at Manhattan; November 24, State Normal at Emporia. Team No. 2 will play the second State Normal team, at Manhattan, on November 24. Coach R. F. Booth, of the College athletic teams, is a native of Illinois. He prepared for College in the high school of Evanston, Ill., entered Northwestern University in the fall of '99, and graduated in June, '03, with the degree of Ph.B. While in College he took major work in mathematics and minor in physics. His efforts at the Kansas State Agricultural College are highly satisfactory in every respect. He is not only a successful teacher of athletics but a high-grade gentleman and educator.

The Kansas State Agricultural College is again in a position to tell its patrons that there has been an increase of students this fall term in nearly every one of its courses. A count was made on October 13 which showed the following attendance by classes:

Seniors	107
Juniors	124
Sophomores	175
Freshmen	422
Preparatory	108
Specials	10
Graduate	14
D. S. Short Course	63
Apprentices	9
Total attendance.....	1032

Compared with the initial attendance of last fall, this count shows an increase of 14 seniors, a decrease of 17 juniors, and an increase of 6 sophomores. On account of the changes made in the work of the freshmen and preparatory classes, any comparison would be out of place. There has been a falling off in apprentices, due to the abolishment of the apprentice courses, which formerly counted about 40 to 50 students. The domestic science short course also records a considerable increase.

ALUMNI AND FORMER STUDENTS.

W. E. Whaley, '86, instructor in the University of Chicago, has been in town for two or three weeks, attending to business affairs.

Prof. J. B. S. Norton ['96] stopped Tuesday on his way from Denver, where his wife takes treatment in a sanitarium. He leaves the baby here with his parents and goes on to Maryland to his work—*Mercury*.

R. G. Lawry, '03, chief draftsman of the structural steel department of Roberts, Schaefer & Co., Chicago, Ill., visited the College last week as part of a short vacation. At present he is interested in coal-washing machinery.

Maude Knickerbocker, '93, of Lead, S. D., recently returned from a trip to Europe. She spent the summer months visiting interesting points in Italy, Switzerland, Germany, France, and England, and found it a most delightful experience.

Mr. and Mrs. A. C. Smith, '97 and '99, are back in their home at 7503 Sunny Side avenue, Seattle, Wash. Although they had a delightful trip in the East, they "wouldn't trade the Puget Sound country for Boston, New York and the World's Fair combined."

Leslie A. Fitz, '02, was married on Thursday evening, October 6, to Miss Nellie Cecelia Hemmant, of Halstead, Kan. Mr. Fitz is special agent of the Bureau of Plant Industry and is now in charge of the Coöperative Cereal Experiment Station at McPherson, but will soon go to Washington, D. C., for other duties. The best wishes of many friends accompany Mr. and Mrs. Fitz.

Historical Society

VOL. 31

NO. 5

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

♦ ♦ ♦

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

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Miss Flora Rose (Framingham Mass. Normal).....	Assistant in Domestic Science
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THE INDUSTRIALIST.

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MANHATTAN, KAN., OCTOBER 22, 1904.

No. 5

SOME ASPECTS OF THE WORLD'S FAIR.

PERHAPS there are still left some of the INDUSTRIALIST readers who have not yet visited the St. Louis Exposition, and who would not be altogether wearied with a few expressions of judgment concerning the salient features.

In the first place, the architecture. To many of us there has remained for ten years, as a dream of imperishable loveliness, that scene of almost unearthly beauty that spread before one around the Court of Honor at Chicago in 1893. Let it be admitted at once, as it is and must be by all students of the history of art and architecture, that the high note of human accomplishment in architectural beauty was reached by the Hellenic civilization of the fifth century before this era, and notably in the acropolis structures at Athens. For intrinsic beauty of the material used (Pentelican marble), for symmetry, stateliness, purity, and nobility, it is universally confessed that the Parthenon and its companion temples represent the best that the human race has been able to do. It is further true that in all probability, from the days of ancient Greece to the present time, such a complete and perfect architectural picture, on so great a scale, dominated so strongly by purely classic Greek ideals, was never presented to the world as was displayed in the Court of Honor at Chicago. The mental impression of that scene of incomparable beauty upon the American people was tremendous. An awakening of ideals in public architecture, unknown and impossible before, followed fast upon the Chicago Exposition, while into the lives of thousands of people who had never known what absolute beauty in architecture meant, who lived in ugly homes in plain little towns and hideous big towns all over the continent, there came an inspiration that has never wholly left them.

It is absolutely safe to say that no such effect will follow the St. Louis fair. The Chicago Exposition, architecturally speaking, was

a unitary conception, the creation of artists. The St. Louis "palaces" are a heterogeneous collection of constructions, uncombined and uncombinable because of their diversity of architectural motives, and giving one an impression of incoherence. There is manifest at St. Louis a straining after effect, and the architects have seemed to strive to obtain it by enormous size in the first place, and by such a lavishing of ornamental detail on all the cornices, pediments, etc., that the structures for the most part seem fairly drenched in fussy ornament which altogether overbalances them, and tires the mind by a sort of insistent obtrusion of lavish wealth that amounts almost to vulgarity. When the eye is constantly drawn from the main architectural lines of a building to a contemplation of its incidental ornaments, it is safe to say that it is not the best architecture. Such is the case at St. Louis. It is very evident that at St. Louis it was felt that somehow all previous affairs of the kind must be outclassed. So, with the central scheme of arrangement about a grand basin borrowed from the Court of Honor, and with a suggestion of a combination of ideas from the Chicago Peristyle and Administration building, the Festival Hall and the Colonnade of the States was devised as an architectural whole that resembles nothing so much as a gigantic confectioner's creation with no end of candy and frosting ornament. It has a certain sort of beauty, due largely to its rather imposing location and the cascade feature connected with it, but nevertheless, this *piece de resistance* of the St. Louis fair really looks as though it were intended to be eaten, after serving its purpose as a banquet decoration. Take Greek lines as a foundation (then forget all about them), add more Renaissance than the Renaissance ever knew, give a taste of Paris, and magnify several diameters, and you have what the architects have gotten ready for you at St. Louis. This architecture disturbs but does not satisfy the soul. Yet let one say this: The night scene from either the Cascade Hill or from the Plaza of St. Louis, when the details and the riotous confusion of ornament and decoration are lost in the night, and only the great main lines of the buildings stand forth in absolute myriads of incandescent lights; when bridges, basins and lagoons are aglow with a soft radiance—is a scene from fairyland. The richness and sheer beauty of the night effect is incomparable, and has never been equalled, perhaps, unless at the Pan-American

at Buffalo—certainly nowhere on so magnificent a scale. Indeed, it is worth while to go to St. Louis to see the fair at night.

So much is dwelt upon the architectural features because, after all, that is what stays longest—the outside picture. As to the exhibits, they are extensive, of course; enormously so. But after all, does this tremendous assemblage of booths and show-cases and commodities, scrambled together for no purpose but to sell, mean so very much? The great building for education is a decidedly important feature, and is unique in the history of expositions. In transportation one sees the same everlasting locomotives in process of evolution until it seems as though the Chicago stock had been dragged out for another show. There are bigger new engines, and there is more to see in matter of electric railway rolling-stock and automobiles; and to one who knows more about the business there is doubtless much more of new importance in the transportation display. Of machinery, let him who knows, speak. There is enough of it, and it makes the same amount of noise as at Chicago.

The display in electrical lines is most notable and is intensely interesting, even to one whose knowledge of the subject is about on the dry battery and call-bell level. When one comes to the display of scientific apparatus for research along lines of applied biology, there is much that is vastly new. The immense advances in medicine and surgery and in public sanitation are surperbly shown. One of the very best exhibits from the educative standpoint, of the whole fair, is the series in the United States Government building, and nothing is better than the presentation of the work of the Department of Agriculture. This is really fine. In the Agricultural Building there is much more and perhaps a very much better series of exhibits than at Chicago, but one feature remains the same. There is the same endless line of people crowding around the booths, where toy articles of food and drink are doled out in homeopathic doses to the usual mob that enjoys the internal sensation created by a free lunch, no matter how small. You will see a man, weighing two hundred twenty-five pounds, patiently consuming \$1.50 worth of valuable and limited-excursion-ticket time in front of a counter, waiting his turn to be talked to by a young woman who is hired to advertise Smith's automatic self-rising flour. He will loiter about until a small sample of the goods is shoved out to him, baked into a baby biscuit

the size of a checker after it has reached the king-row. You watch him pretending to be interested in the string of talk that the attendant grinds out like a graphophone to each eater, until finally off you see him go, heading for the fig-prune cereal coffee counter, or the place where a California man is giving away an olive.

In horticulture there is an amazing display of fruit, though to the writer's mind not so interestingly gotten up as at Chicago. One misses also in the horticultural building the magnificent mass collection of ornamental plants seen at the Columbian. Speaking of plants brings one to the outside. There is manifestly too much ground to cover at St. Louis. The result is seen in much raggedness and the use of much material for landscape work that is and looks cheap. Just why the castor-bean and the cottonwood seedling should cut so much figure in vegetation masses at St. Louis the writer does not know, unless it is because they are cheap and grow fast. The castor-bean may convey to some minds a concept of tropical luxuriance, but to those who have seen it chiefly as the badge and emblem of dirty poverty in city back yards, the connotation is other than the one intended. Perhaps a bunch of bananas would do as well. There is nowhere at St. Louis the well-worked-out and rich landscape work seen along the lagoons and the Wooded Island at Chicago, with one exception—the forest of native trees into which the exposition merges behind the Cascade Hill. This restful forest is a delight to the eye and mind, and, to use a trite mode of utterance, no exposition should be without it. It is also interesting to see the three hundred large trees (twelve inches or so in diameter) that have been transplanted along the basin and lagoons. Only three were lost in two years. It is a first rate piece of accomplishment. The trees are soft maple, to be sure, but it is good to have them and they add materially to the effect. This is one of the things we missed at Chicago.

The state buildings are generally remarkably good. The Kansas building, to those who remember our humble and homely effort at Chicago, is gratifying in the extreme. The foreign buildings are a notable advance in general over what former expositions in America have had to present.

Perhaps one should be permitted a vote of disappointment over the mediocrity of the fine arts exhibit from abroad—from France in particular—and at the paucity in point of numbers of works of great masters any where. The loan collection of these is very

small indeed. The work of recent American and British artists seems to be recognized as the best of the fine-arts display. One wonders what, at these expositions, is the criterion for admission of a supposed work of art. There are marines at St. Louis, in which the ocean is apparently achieved by paint thrown in bucketfuls from a distance of ten feet. Where each bucketful strikes—behold a wave. There is a dissection canvas—a scene in a medical school. It is perhaps interesting as a representation of that sort of thing; might be a good gift to a medical college. But is it art? There are absolutely huge canvases commemorating events in recent German history, which, like ours of the signing of the constitution, of Lincoln reading the Emancipation Proclamation to his cabinet, constitute a means of embalming these facts in pictorial form. Perhaps they are adapted to certain public places. But are they great art?

Everyone who goes to an exposition goes primarily for recreation, change, and novelty. If he cannot get enough of it in the exposition proper he can get the rest of it in—well, shall we say the exposition improper—the Midway, or the Pike, or whatever name is given to the procession of mild fakes that seem to belong now to all world's fairs.

No one who has visited the St. Louis Exposition can have failed to notice the ubiquity and obtrusiveness of the "barker," and especially that recent development, the megaphone barker, due perhaps to the location of the pay concessions so close to the legitimate exhibits. Still, a fair is not only a comparative presentation of the contemporary civilization of the globe, but also a place where nations show what they have to sell, and, unfortunately, not always the best.

Doctor Johnson said of the Giant's Causeway in Ireland that it was "worth seeing but not worth going to see." The St. Louis Exposition, however, is not only worth seeing but it is well worth going to see, if only for the brief experience that one has in seeing and coming in contact with foreign people and things. There is surely enough in the great display to enable each individual to find some particular thing that he very much wished to know about, presented in such a manner as to enable him to grasp its significance and its relations in the fullest manner and in the shortest possible time.

H. F. ROBERTS.

FALL TERM PROGRAM, 1904, SHOWING IN

INSTRUCTOR.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.
Walters.....		Architecture....3	El. Proj. T&T...13	El. Proj. W&F...21
Evans.....	D. S. Drawing...22			
Weeks.....	D. S. Drawing...21			
Willard ¹	Hum. Nutr....57	An. Nutrition...19	Ad. Ing. Chem...10	
Mathewson.....	Electro Chemistry, Saturday.....16		Analytical Chemistry.....29	
McClenahan.....	Chemistry I....49	Chemistry I....48	Chemistry I....37	
Vail.....				
Popenoe ¹	Adv. Ent....3	Entomology....29	Adv. Ent....6	
Dean ¹	Entomology....24			Entomology....2
Scheffer.....	Phys. Geog....21			
Remick.....	Diff. Calculus....15	Diff. Calculus....23	Zoology....41	
Halstead.....	Algebra III....34	Trigonometry....15	Def. Integrals...7	
Zeininger.....	Algebra II....24	Geometry I....42	Def. Equat....14	
Booth.....	Geometry II....38	Algebra II....21	Trigonometry....15	Algebra III....28
Seaton.....	Trigonometry....20	Algebra III....32	Algebra II....26	Geometry I....44
Eyer.....	Electro Chemistry, Saturday.....16		Geometry II....30	Algebra I....24
Hamilton.....	Dyn. Lab....Tu. & Thur. 8, Wed. & Fri. 8		Algebra III....23	Algebra IV....37
Anderson.....	Physics I....27	Physics I....14	El. Physics....51	D. C. Mach....16
Roberts ¹	El. Physics Laboratory.....18	Physics I Laboratory.....18	Physics III....15	Physics III....27
Freeman ¹	Botany II....22	Botany II....28	Physics I Laboratory.....18	Botany I....61
McKeever.....	Hist. of Ed....6	Botany I....72	Botany II....18	
McCormick.....	Engineering Lab., Tu. & Wed....7	Algebra I....33	Adv. Grammar...36	Adv. Grammar...35
Paul.....	Mach. Des....Tu. & Taur. 10. W. & F. 8		Mechanical Drawing.....18-19	
Dearborn.....	Engineering Laboratory, Tu. & Wed....7		Surveying....8-2	S. Lect. F. 7 S. 33
House.....	Woodwork I....10	Woodwork I....9	Mechanical Drawing.....18-19	
Wabnitz.....	Machine Shop, Monday.....4		Woodwork I....11	Woodwork I....10
Ridenour.....	Machine Shop, Tu. & Thur....4			
Nicholson.....	Blacksmithing I, Tu. & Thur. 2, W. & F. 1			Shop Lect....42
Dickens ¹	Pomology....10	Floriculture....22	Blacksmithing I, Tu. & Thur. 3, W. & F. 3	
Eastman ¹				
Brink.....	Eng. Lit. I....14	Rhet. II....28	Eng. Lit. I....25	Rhet. II....24
Rupp.....	Adv. Comp....37	Classics....34	Adv. Comp....23	Classics....37
Rice.....	Readings....27	Rhet. I....30	Readings....28	Rhet. I....22
Hopps.....	Classics....38	Adv. Grammar...41	Composition....21	Readings....20
Ten Eyck ¹				
Shoemith ¹				
Kyle.....				
Calvin.....	D. S. Elective....9	House Mng....40	Second-year Short Course.....21	
Rose.....		First-year Short Course.....20		
Pancake.....				
Price.....	Eur. History....26	Eur. History....29	Anc. History....38	Anc. History....25
Kammeyer.....		Economics....18	Pub. Spk. I....20 14	Pub. Spk. I....20-16
Erf ²				
Kinzer ¹				
Wheeler.....				
Cortelyou.....	German....40	German....40	Dairying....32	
Valley.....	Vocal Music.....		German....47	German....42
Brown.....	Violin and Band.....			
Augsburger.....	Piano.....			
Barnes ¹		Vet. Science....23	Vet. Science....19	Bacterio....33-32
Sweet.....	Physiology....21			
Rickman.....	Printing....2	Printing....1	Printing....4	Printing....5
Rodell.....				
McFarland.....	Bookkeeping....42	Bookkeeping....39	Bookkeeping....42	Bookkeeping....29
Holroyd.....	Adv. Grammar...33			
Short.....	Anc. History....23	Algebra I....30		
Thompson.....				
Loomis.....	Ph. Geog. I....29	Ph. Geog. I....33	Ph. Geog. I....40	Ph. Geog. I....38
Barbour.....				
Barnes.....	Sewing I....8		Sewing I....10	Phys. Training...12
Cowles.....	First-term Short Course.....			Sewing I....10
Coe.....		Sewing I....8		
Colliver.....	Algebra I....36		Algebra I....33	Sewing II....8
Bottomly.....				Algebra I....30

¹Experiment Station Work.²Absent on Leave.

Morning Class Hours (Tu., Wed., Thur., Fri., Sat.)

1. From 8:35 to 9:20.
2. From 9:25 to 10:10.
3. From 10:15 to 11:00.
4. From 11:05 to 11:50.

Fifth Hour.		Sixth Hour.		Seventh Hour.		Eighth Hour.	
Advanced Projection, Tu.....41							
Perspective, Wed. & Fri.....17							
El. Projection, Thur.....26							
Geometry Drawing, Thur.....16							
Object Drawing.....Tu. 33, Fri. 30							
Freehand Drawing.....Tu. 34, F. 30							
Advanced Inorganic Chemistry Lab., Tu. & Thur. 10							
Chem. Lab. I.....Tu. 28, Wed. 34, Th. 34, Fri. 34							
Ent. Laboratory.....Tu. 12, Wed. 14, Th. 11, Fri. 12							
Zool. Laboratory.....Tu. & Th. 23, Wed. & Fri. 18							
		Anal. Geom.22					
Laboratory.....20-21							
El. Physics Lab.....23-31							
		Thermodynamics.....7					
Pow. Trans.....17-19							
Woodwork II.....12							
Machine Shop, Wed., Fri., Sat.....15				Machine Shop.....Tu. & Th. 8, Wed. & Fri. 8			
Foundry.....Wed. & Fri. 7, Tu. & Thur. 4				Foundry, Wed. & Fri.....2			
Blacksmithing II.....Tu. 7, Wed. 11, Th. 5, Fri. 9				Blacksmithing I, Tu. & Th.....4			
Blacksmithing I.....Tu. & Th. 3, Wed. & Fri. 3							
Hort. Lab.....Wed. 15, Th. 2, Sat. 1, Mon. 1							
Agriculture.....24							
Domestic Science Elective, Th.....9							
Domestic Science I.....Tu. & Th. 15, Wed. & Fri. 15							
First-year Short Course.....22							
Economics.....40							
Bact. Lab.....Tu. & Th. 19, Wed. & Fri. 16				Bact. Laboratory.....Tu. & Th. 9, Wed. & Fri. 16			
Printing.....20				El. Physiology.....22		El. Physiology.....20	
				Print ng.....4			
Grammar B.....25		Grammar B.....27				Grammar A.....24	
Arithmetic B.....39		Arithmetic A.....31		Arithmetic B.....31		Geography.....29	
History A.....21		History B.....36		History B.....28			
Phys. Training.....32				Phys. Training.....31			
Dressmaking.....24							
Sewing III, Wed. & Fri.....15							
Short Course.....16							

5. From 1:05 to 1:50.
6. From 1:55 to 2:40.
7. From 2:45 to 3:30.
8. From 3:35 to 4:20.

THE NEW DEPARTMENT OF GERMAN.

IN whatever line the modern student turns his energies a practical knowledge of German is very useful, often indispensable. In literature, the arts, and the sciences, much of the newest and best work appears in German, so that he who would keep abreast of the times is forced to acquire at least the rudiments of that language. It is planned to have the work in this department as practical as possible without, however, excluding the growth in the pupils of a love for literature. The tendency toward introducing German classics into second- or even first-year courses is becoming too frequent; students who have "mastered" Faust are too often unable to make the most commonplace remarks in German or to read current German literature fluently.

The text-book used in beginning classes is Keller's First Year in German. After two recitations given to learning the German sounds the pupil at once begins reading. Vocabularies are learned from the start; the number of words at the student's command is constantly and rapidly increased. Grammar is learned gradually, with the reading lessons, in such a way as not to discourage the pupil. Oral and written work, as also simple conversational exercises, begin with the first reading lesson. Training of the ear is not neglected. The interest is kept up by use of entertaining readings (anecdotes), each of which extends over several lessons. The simpler correspondences between English and German consonants are studied early in the course. Toward the end of the second term a few bits of poetry, chiefly ballads, are read. No poems are memorized, however, this being of relatively little importance.

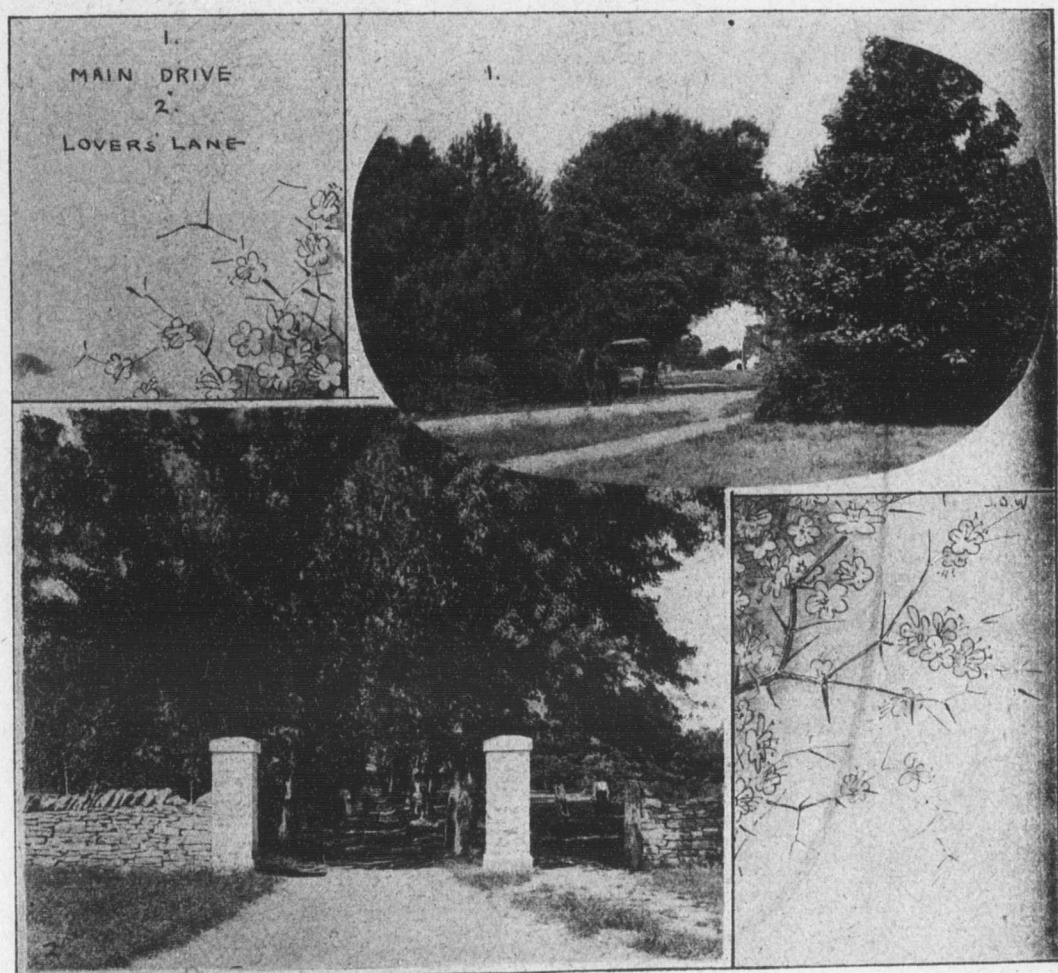
In the course of the second term, or at the beginning of the third, Müller and Wenckebach's collection, "Glück Auf," will be taken up. Grimm's Law is studied in fuller detail than heretofore. Such selections are read as will give something of an insight into German manners and customs. A few of the most popular songs are studied. Some of the chief treasures of Germanic mythology and saga are taken up, as well as extracts from German history. Whenever a tendency to drag is noticed, one of the anecdotes given in the appendix of "Glück Auf" will be read.

It is planned to devote the second year's work almost exclusively to scientific readings. The text-book used will be some collection, such as Dippold's or Gore's Science Reader, where ex-

tracts from treatises on chemistry, physics, geology, botany, zoölogy, engineering, etc., are given. A short literary text or two will be read so that the student will not forget entirely his literary vocabulary while acquiring a stock of scientific words and phrases. The class will read during the year one issue of some German periodical.

In case a third year is at some future time added to the department, certain of the works of Schiller and Goethe will be read. The first two years, however, must be devoted by the pupil to acquiring as thorough and as practical a knowledge of German as possible in the time applied. In this way the character of the department is best kept in harmony with the purpose and aims of this College.

JOHN VANZANDT CORTELYOU.





Galloway Bull, First King of Avondale 19420, of the College Herd.

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LOCAL NOTES.

The Farm Department has made four cuttings of most of its alfalfa this season.

The back yard of the workshops is being covered with a dressing of coal cinders.

President Nichols went to Kansas City last Wednesday to visit the Royal Live Stock Show.

The College Y. W. C. A. reports a membership of 85, and the Y. M. C. A. of 108, a total of 193.

The ampelopsis on the walls of the College buildings was dressed in gold and purple the last two weeks.

The new water-tower has received its roof and two or three coats of paint. It begins to look like business.

The fresco painters have completed the ceiling of the new Auditorium and are now at work on the walls and the stage.

The Horticultural Department has dug its experimental potatoes. About one hundred fifty varieties were planted and housed.

Colonel Bradshaw, of Washington, D. C., addressed the students on Wednesday morning after chapel, on "character-building."

The carpenter-shop is constructing six large, glass cases for the Chemistry Department. The cases will be used for storing mineral specimens.

The wiring for the electric lights in the Physical Science Hall will soon be completed. The work is being done by the Heat and Power Department.

The north corridor of the second floor of Anderson Hall is being converted into four office rooms to be occupied by the teachers in that part in the building.

Professor McKeever delivered a lecture before the Smith County Teachers' Association, last Saturday. The subject of his discourse was, "The Teaching Process."

The Botanical Department has been collecting sets of Kansas weeds during the past season. These are being mounted and will be supplied to district and other public schools in the State, at a price sufficient to cover the cost of preparation.

The Marshall county club treated Professor and Mrs. Walters to a surprise party last Saturday night. The evening was pleasantly spent by playing the new parlor game, "Twenty-one," and emptying a huge basket of delicacies.

This afternoon, October 22, the football team will play the St. Mary's eleven. An excursion train left Manhattan at 1:05 o'clock, over the Union Pacific, for St. Mary's, carrying a large number of Agricultural College students and Manhattanites.

On Sunday Mrs. Lawrence brought her son, Ed Myers, a College student, to Mrs. Graham's boarding-house south of the College, where he rooms. For some reason the horse backed the buggy from the road into the deep drainage ditch. Mrs. Lawrence was badly bruised and the buggy was wrecked.—*Nationalist*.

Enos Harrold, of Houghton, Mich., is here for a short visit with the Duffields and other old friends. Mr. Harrold was formerly foreman of the iron-shops at the College, and left several years ago to accept a similar position in the Michigan School of Mines. He is now on his way to Colorado for his health, and may spend some months in Arizona.—*Daily Republic*.

The fine, cool, fall weather of the latter part of the week brought many visitors from all parts of the State to the College. Some of them were here for the first time, and all expressed themselves as being astonished at the size and character of the institution, the bright students, the beautiful campus, the substantial buildings, and the perfect order existing everywhere.

The ceremonies of unveiling the Tatarax Obelisk will take place in the city park on Thursday, October 27. A program appropriate for the occasion has been arranged and there will be several speakers present. The principal address will be given by J. B. Brower, of St. Paul, Minn. The bands of the city will furnish music. The obelisk has been completed several days and stands near the fountain in the city park.

In view of the improbability of the completion of the new Auditorium in time for the first number of the society lecture course, the committee has decided to put on the first number, and probably the second, in the old chapel, and tickets will be sold at \$2.00 each, for its entire capacity. Holders of these tickets will not be assigned to seats, so that the admission will be general. Upon the completion of the Auditorium, tickets will again be placed on sale, and holders of tickets first sold will be entitled to first class seats when the drawing occurs. Rebate will be allowed at second sale for numbers canceled. Tickets will be on sale from 1:00 to 4:00 P.M. on Monday and Tuesday, October 24 and 25, at the three society halls and Willard's drug store. The course, with dates, is as follows: Campanari Concert Co., November 19; Boston Comedy Co., December 2; Wunderle Musical Co., December 21; Daniel McGurk, January 9; Strickland W. Gillilan, February 27; Lorado Taft, March 9; Frank Dixon, March 28; Russell H. Conwell, April 1; Rabbi Leon Harrison, (date announced later).

The brick-masons have completed the heating tunnel to the new Auditorium and a few days of plowing and scraping will restore the torn-up surface west of the building to its proper level. A large amount of filling will have to be done south and east. Superintendent Lund has laid his steam mains to the building, the radiators are ready, near the west entrance, and a week or two will see the heating problem of the big hall in the hands of the Heat and Power Department.

A large company of Y. W. C. A.'s and Y. M. C. A.'s spent a very enjoyable evening a week ago Saturday as the guests of Prof. and Mrs. J. T. Willard, whose spacious lawn, lighted with electric lights and Japanese lanterns, looked very attractive. At a huge bonfire, apples, marshmallows and corn were roasted, a feature much enjoyed by the young people. There were numerous other plans for the pleasure of the guests. Silhouettes were drawn, which always produce laughter, and it is generally decided they were not half good looking enough. Mrs. E. R. Nichols was also a guest.—*Daily Republic*.

ALUMNI AND FORMER STUDENTS.

W. J. Lightfoot, '81, of Montrose, Colo., now assistant engineer in the United States Geological Survey, writes to the College for library material to assist him in the preparation of an article on the "Genius of Russia," to be presented at a public meeting.

Geo. M. Logan, '02, has resumed his studies in Rush Medical College, after spending a very pleasant month in Kansas. He is located at 6036 Woodlawn Avenue, Chicago, Ill., where he wishes to receive the INDUSTRIALIST in order to keep informed concerning College affairs.

Dr. E. W. Reed, '92, visited College recently for the first time in four years. Since his last visit he has completed a four years' course in medicine at the University of Michigan. In the near future he will be located at Holton, for the practice of his profession. Doctor Reed's ability and thorough preparation should win him success.

F. A. Waugh, '91, is the author of bulletin No. 97 of the Hatch Experiment Station at the Massachusetts Agricultural College. It is on "The Farm Wood Lot." That it is well written will be understood without saying by those familiar with Professor Waugh's productions, and it should fulfill a useful purpose in New England and some other places as well.

While attending the Girard Farmers' Institute, Professors Ten Eyck and Willard were very pleasantly entertained at the home of Geo. Loomis, '04, and J. A. Loomis, third-year student in 1901. The boys find themselves very fully occupied with the work on a nine-hundred-acre farm. The floods this season have affected them disastrously, as they have many others.

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
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THE INDUSTRIALIST.

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MANHATTAN, KAN., OCTOBER 29, 1904.

No. 6

SOME ASPECTS OF SOCIAL SENSITIVENESS.*

With Special Reference to Bashfulness.

THE most casual observation will convince one that people of all ages are more or less sensitive to the presence of others. The mere child, after arriving at the age of discrimination between persons and things, will indicate this fact by some kind of conduct that is relative to the presence of others. It may be a mere look of satisfaction or approval, or it may be a burst of laughter, or a cry of fear. Older people may be observed to indicate this awareness of the presence of others in scores of ways that are merely modifications or refinements of the more primitive, instinctive forms.

Significant as these facts are with reference to any given situation, a closer observation will show, I hope to prove, that these various modes of response to other selves have a far deeper significance in determining the future conduct of the individual.

This sense of other selves seems really to be a deep-seated characteristic of the human race. Moreover, it is not a difficult matter to discover some manifestations of it in some animals of the lower order. It is a race instinct which has at least a kindred characteristic in all the animal species that tend to gregariousness. In an interesting experiment with dogs, for instance, I have been convinced that an ordinary mongrel may be seen to manifest no fewer than five distinct attitudes toward those of his kind. Let the series range all the way from an innocent, playful puppy to a burly, ill-tempered bull-dog; and, especially after he has become acquainted with them, each one will draw out from him a different expression of mood. This fact will be indicated plainly to the close observer by the "pose" of the mongrel, *i. e.*, by the position and arrangement of the ears, tail, nose, mouth, eyes, back, hair, etc.†

*This paper was presented for the degree of Master of Philosophy at the University of Chicago, August 1904. A fragment of it appeared in the *INDUSTRIALIST* May 7, 1904.

†See Darwin, *Expression of Emotion in Men and Animals*, ch. iv.

But it is my purpose to treat this subject with more especial reference to the human species. Many of the various forms of social sensitiveness probably find their origin in one common utilitarian instinct, namely, fear.* The instinct to run away from danger helped to preserve the species. As the dangers from without grew less and social bonds within were strengthened, it is only natural that this instinct should differentiate into some refined modifications, such as bashfulness, shame, and the other forms of embarrassment, which, if not utilitarian in the most vital sense, are at least utilitarian in a social sense.

First, let us notice some of the more outward manifestations of social sensitiveness in children.

1. Fear of persons seems to be one of the earliest modes of expression of this emotion. Darwin, Compayre, Preyer, and others, noticed indications of such fear in the case of mere infants, ranging from two to six months of age.† Fear is likely one of the most primitive instincts. Among savage and barbarous peoples, any one not a member of the tribe was classed as a mortal enemy. So the child is fearful of any person not a member of his own immediate family.‡ Even in the case of children, it can be shown that during fright many physical reactions new to the organism are likely to occur.

2. Timidity and shyness are manifestations of the instinct of fear, and appear somewhat later than it does. According to Baldwin, their physical manifestations are organic reactions that accompany mental and social attitudes.§ In such cases many of the normal activities are evidently inhibited, while new forms of movement are carried out. Many of the latter are merely variations of the normal type.

3. Bashfulness is a common and somewhat pronounced form of social reaction. In case of children, Baldwin notes three stages—(a) organic, during the first year; (b) social toleration, appearing a little later; (c) real bashfulness, without fear, third year or later.|| A well-known manifestation of this emotion is blushing, which is usually noticed first some years later, and which becomes more frequent and more marked during youth. Darwin says that the

*Baldwin, *Social and Ethical Interpretations*, p. 202.

†Darwin, *Expression of Emotions*, etc., ch. 12; Preyer, *Senses and Will*, ch. 6, 13; Miss Shinn, *Biography of a Baby*.

‡See Titchener, *Outline of Psychology*, p. 275.

§Social and Ethical Interpretations, p. 203.

||As above, p. 196.

reddening effect of blushing "is a result of capillary disturbance caused by the attention being directed to that part of the body," i.e., the face; and "Originally self-attention directed to personal appearance in relation to the opinion of others, was the exciting cause."* Royce would probably characterize bashfulness as a modification of what he calls "instinctive restlessness."†

Here again inhibitions, approaching in some cases temporary paralysis, are easily noted. Nervous twitchings, trembling, palpitation, and the like, are the usual accompaniments. What I want especially to remark, without discussing the matter here, is that, as a result of this bashfulness, the individual is likely to execute many movements, both mental and physical, that are new to the organism.

4. Showing off, as a form of emotional response to other presences, has many variations. But here again in every case, under stress of the embarrassing situation, the organism of the child seems to acquire many adaptations that are comparatively new. It is evident, of course, that in the process of securing these adaptations there will be much of the hit or miss, trial and error, kind of movement; but it will count as a part of the general experience, enriching the mental life of the individual. From this point of view the errors have as much relative value as the successes.‡ In this connection, I can not do better than quote freely from an article in the *Pedagogic Seminary*, by G. Stanley Hall and Theodate L. Smith. Of course, many of these acts are more or less imitative, but they are, nevertheless, acts that would not be undertaken if it were not for the consciousness of being observed.§ In every such case, I think, the conduct would be classed as unnatural, or an intensified form of natural conduct. From the article mentioned above I select the following records of the conduct of children showing off before strangers, and also the cases of several older persons:

1, male, four years old. Being watched at his play, would run as fast as he could and fall down.

2, male, seven years old. When watched at play began to hammer the fence. "See, I am moving this fence."

3, male, five years old. First pants. Walked around, then began to kick, laugh, lie down, roll over, etc.

*Expression, etc., p. 338.

†See his *Outlines of Psychology*, p. 309 ff.

‡See the writer's article, "The Meaning of Error in Education," *Teachers' World*, Mar., 1904.

§See "Showing Off and Bashfulness," *Ped. Sem.*, Vol. 10, No. 2.

4, female, five years old. New hat. Sits down. Holds the head first on one side, then on the other, . . . will get a book, stand on a chair, speak pieces, etc. Soon as people leave she acts natural.

5, female, seven years old. Likes to say things to make people laugh. Says whatever she thinks of first, whether good or bad.

6, female, fourteen years old. Voice unnatural and her words do not sound like English when a certain boy friend is near. Sometimes the affectation continues after he is gone.

7, female, two years old. Turned summersalts when calling.

8, female, seven years old. Thinking herself watched, tried to walk in a fine way.

9, two boys, aged eight and six years, playing "dares." The older one dared the younger one to put his foot on a chopping block, which the latter did and had his foot cut off at the ankle.

10, male, thirteen years old. Ran out of the room to avoid meeting a girl.

11, male, fourteen years old. Knowing that he is observed, is likely to stumble.

12, female, eighteen years old. Servant. Company being present, let the pie slide off the plate on some one's dress.

13, female, five years old. Very bashful before strangers. Face grows red and she says the opposite of what she means.

14, male, fourteen years old. Much trouble with what was called "swallowers" if he sat in company.

15, female, sixteen years old. Face would flush and heart palpitate if spoken to by a stranger.

16, male, seventeen years old. Good speaker. Feels flush and faint when he faces an audience. Every nerve seems to twitch.

17, female, adult. Often addresses meetings and presides with great dignity. Says it is a great trial.

18, male, nineteen years old. When talking to a young lady, turns bright red, stammers, smiles, . . . and finally bolts.

It will be admitted, I think, that all forms of embarrassment are accompanied by pronounced organic changes. Some of these changes, as in the case of blushing, palor, and the like, are noticed by the most casual observer. Others, of course, are more hidden and may be located within the visceral, or other inner regions of the body. It seems, moreover, that these emotions are productive of a sort of pain, or at least an unpleasantness, and

that there is a corresponding sense of unnaturalness, or restlessness, attending them. The physical reactions are both sudden and unpremeditated. The embarrassed child is likely to rush into acts that are novel to him. His condition is not unlike that of the caged animal of which Professor Royce speaks.* His previous habits do not furnish a mode of relief; and, seeing no familiar avenue of escape, he begins a *struggle with the environment*, which results in *much new experience*.

If this theory is a fair one, the utilitarian nature of social sensitiveness is easily made out. *It sets up in the individual the tendency to make new adjustments*—a tendency to struggle more or less blindly, but persistently, with the environment—and hereby is rapidly secured the foundation knowledge for future conduct.

Now, it is certainly evident to all that there is a vast difference in the amount of social experience of different growing children. Compare, for instance, the social life of an only child, born and reared in an isolated place in the country, with that of another born and bred in a large city, and privileged to play daily in the public street with every variety of other children, and having the additional experience of every form of greeting from older people who pass. Even supposing there were a thousand such comparisons instead of one, how vastly different, in every case, the two would behave in the presence of others at any period, say, between the ages of five and twenty-five years.†

It is rather singular that in all the works on pedagogy and child development, there is to be found almost nothing of a definite nature touching this social sensitiveness. Should it be left to chance occasion? Or, is conscious oversight possible and advisable? Is there a best time for this kind of experience? And should it be limited in amount? Such questions as these might be pertinent here.

Personally, I believe that this sensitiveness to others is not only a powerful stimulus to various new forms of conduct, but that in a hundred ways it also works itself into the fabric of character; and that *it should have such exercise as will give it a certain*

*Outline of Psychology, p. 315.

†An illustration might not be out of place here. While driving through the country recently, I stopped at a farm-house on an errand. Having met a five-year-old boy alone at the front gate, I said: "Hello, sonny; what's your name? Is your pa at home?" During my efforts to draw him out in conversation, the little fellow stood for a short time with a scared look on his countenance and a whole hand in his mouth, and then broke and ran for the house crying. Not long after, I halted by a group of three little boys playing on the sidewalk in the city. To the brightest looking of the three, about six years old, I said as above: "Hello, my boy, what's your name?" "You go to h—!" was the pert reply.

degree of permanence until the character is fully formed. "Sensitive-ness means power. All strength of will and of character is developed through the capacity for feeling and for discrimination through feeling," says Paul Tyner.* Just how much exercise this emotion should have is a problem, the solution of which will not be attempted here except in bare outline. It is very evident that it depends altogether on the nature of the child. There really seems to be no general rule of exercise in such a case except, perhaps, this very vague one: This social sensitiveness should be kept alive and active during the entire period of character development of the individual, to such an extent that, when full maturity is reached, it may have shaded off into numerous little forms of easy, graceful, social conduct.

It is evident, then, that this special kind of experience may be either overdone or underdone. Some children reared in the densely populated part of a city become blasé before they reach ten years of age.† Especially is this true if they are thrown daily into the company of older people of every rank and character, who are constantly twitting and teasing them, and otherwise drawing them out in conversation. The typical hotel child is a good illustration here. So is the child whose fond parents consider him precocious, and foolishly and repeatedly make a public display of his talents. I have carefully kept a record of five such cases as the latter and will give a brief outline of them, as follows:

1. Boy, twenty-four years old, was considerably celebrated as a "Boy orator." Began to speak pieces in infancy, and to deliver entire, memorized sermons, with the easy grace of a Beecher, at eight. Regarded by all as a great prodigy. Now a very dull, commonplace citizen, lacking in originality and spontaneity.
2. Boy, twenty-two years old, dissipated and oblivious to social emotions. Lacks ambition and self-respect. Was once the pride of the town because of early manifestations of future greatness. Recited in public at four, and was tossed and buffeted about by older people to the extent that, at nine or ten, social embarrassment was no longer experienced.
- 3, girl, now seventeen. Was a beautiful child and made to sing and perform otherwise in public from five on. At present, pronounced "listless and comparatively worthless."

*Pain: Its Cause and Cure.

†For a brief discussion of this emotional difference, see Titchener, Outline of Psychology p. 224.

4 and 5, boys, now twenty and twenty-five. Not much unlike 1 and 2, respectively.

It seems reasonable to say that all children who pass at one rapid bound through the periods of infancy, childhood, and youth, without receiving the emotional development that these periods so richly supply—that such children are doomed to an inexorable fate of intellectual mediocrity and general lassitude. In mature life, the benumbed sensibilities of such an individual may be played upon and slightly affected by the environment, but such a thing as his struggling strenuously and successfully with the more difficult problems of life is out of the question. It is stated on good authority that practically all the men who, by their unaided efforts, achieved eminent success in commercial, political, and other occupations, have been recruited from the ranks of the boys reared on the farm, or under similar circumstances. "The country boy, in the long run, usually gets ahead of the city boy," says John D. Rockefeller. "The life of large towns is not favorable to intellectual work. The men who have had great influence on their age have been brought up in solitude; and all the great men of England, and even of London, were brought up in the country."*

Now, it seems to me that the defeat of the city or town-bred boy in these undertakings can be attributed largely to the unfortunate conditions in his social environment as set forth above. Certain of his emotional experiences die an untimely death before he is old enough either to reflect intelligently on their meaning, or to imagine adequately for himself a better condition for the future. Long after his quiescent life has begun to drag out its prosaic existence, his country cousin continues alternately to pass through the soul-trying experiences of defeat and embarrassment, and the triumphant experiences of success and higher attainment. In the language of another, the latter is securing "adaptations to the environment such as momentary conditions imperatively call for."†

Let us pass now to a somewhat later period, the earliest years of pubescence, for another aspect of this problem. The full period of pubescence comprizes the five or ten years immediately succeeding puberty, according to Irving King, in his *Psychology*

*Lombroso, *The Man of Genius*, p. 153.

†Royce *Outlines of Psychology*, p. 321.

of Child Development. In a very interesting discussion of the subject, this author says: "It (adolescence) may be characterised as primarily the time when the youth comes to consciousness of the sexual functions, and when the chief problem of coördination is that of adjustment to the values of the social organism in which he lives . . . and a time of great emotional instability."* A little later, he continues: "It seems that, at this time, all the relatively unorganized forms of experience are peculiarly open to suggestion." At this period, the whole situation of life takes on a new and intensely interesting aspect, especially that part of it which has to do with social relations.† For the first time, perhaps, the youth takes a serious interest in the future. On this point Professor Dewey says:

"It is a period of tremendous enlargement of the sphere of interests. . . . The youth has an entirely new point of view from which to consider himself. He feels and sees himself with reference to the expanding world about him. . . . Socially and emotionally, he feels himself a part of a larger whole."‡

It is hardly necessary to say that all this sudden expansion of the youth's mental horizon has an organic basis in the awakening of the sex instinct. In the normal case, the love nature manifests itself in an out-going search for a response of the same kind in one of the opposite sex. There is a marked tendency to pair off among such young people; and the self-conscious acts of each, so far as they relate to personal conduct, are thought of as referring most particularly to the other member of the pair. The emotional experiences are strong and frequent. Even the thought of the absent loved one is often attended by deep emotion; and it is *during this reflective period* that the youthful lover is *most actively engaged in making over his own character*. Specific results are easily seen in the following forms:

1. The bearing or pose of the body is changed. The youth who is in love is likely to stand and walk more erect, with chest out and shoulders back. He is all the time more or less conscious of how he looks in the presence of others.§ He also begins to take a new interest in his wearing apparel. Considerable time is now

*P. 222-3.

†See "Love as a Factor in Evolution," Woods Hutchinson, in *Monist*, Vol. 8, p. 205: "The animal or man who permits affection to influence his conduct in the struggle is obeying the law of nature just as truly as the one who is influenced by hunger."

‡Mental Development, p. 16.

§See Royce, *Outlines of Psychology*, p. 284.

spent in brushing his clothes and hair and otherwise arranging his toilet. Any lack here is sure to add to his frustration and discomfort in the presence of the other sex.

2. This youth shows also a decided tendency to improvement in his language. Instead of the former broken, monosyllabic mode of expression, he now tries to round out his sentences. His thought processes are more *rapid* and *intense* than formerly and require a larger vehicle of expression.*

3. These emotional spells soon show their traces in the countenance of the youth. He is conscious of an effort to draw his facial expression into better form. The lower lip is drawn up closer, and other of the features are made more expressive of his dominant emotion, until he is finally capable of sending those "speechless messages" of which the poet writes.†

Many teachers regard the little love affairs of these youngsters as a serious interference with the progress of education, and try to suppress them; but the opposite view would be more nearly correct. To attempt to crush out this love sentiment is to make an assault upon life itself. Wise direction, rather than suppression, is needed here. In fact, when a youth first "falls in love" seriously, he is in an ideal condition for instruction. Many a boy never looks at the question of his education seriously until this period arrives. For then his thoughts and feelings are not only novel and intense, *but they come and go in more rapid succession.*

Let us illustrate concretely the teacher's opportunity and duty here. For instance, concomitant with the awakening of the love nature, there comes also a new appreciation of the beautiful. Poetry, art, and æsthetic sentiments of a general nature are now likely to appeal strongly to the young life; and, as he eagerly contemplates the meaning of it all, *it is always with a more or less distinct reference to the one he loves.* He is learning this verse of poetry for *her*. This bit of fine sentiment is for *her* sake, and the beauties of this flower garden or that piece of architecture are to be described to *her*. It is only necessary for the teacher to help make the situation free and easy here, by supplying the proper materials, and thereby directing the spontaneous growth of the young mind. But how much might well be said in condemnation of the teacher who ignorantly tries to smother out or otherwise antagon-

*Ribot, *Psych. of Emotions*, p. 272.

†For a theory of the genesis of modesty, shame, etc., see James' *Psychology*, vol. 2, p. 435-7. He follows Spencer here.

ize these beautiful young love dreams, because, forsooth, the young boys and girls are pairing off in their love affairs, and because it is a "mean thing to have break out in a school any way."

The matter of more serious courtship with reference to people of more advanced age will be considered now, in order to bring out a somewhat different aspect of the subject.

It seems to be instinctive in the male to press his suit vigorously, and in the female to show disposition to run away. Among primitive tribes of men, the male was expected to secure his mate by the most strenuous means, even at the hazard of his life, and the female was expected to try just as hard to escape, until captured, and then to submit willingly. Such a method of courting, in fact, seems to have become an unwritten law among many of the primitive tribes, and such is the method practiced to-day among certain uncivilized peoples. So the sentiment, "Faint heart never won fair lady," pervades the social fabric of the present. As these attitudes of the two sexes respectfully can be shown to have been an aid in the preservation of the species in primitive times, so do their modifications serve a useful purpose to-day.

It is said that the young woman who forgets how to blush loses one of her most valuable charms. I believe that her chances of matrimony are much lessened. The various expressions of gallantry in men and those of modesty in women serve to increase their chances of marriage, and thereby of reproducing their kind. Observe, then, *e. g.*, the utilitarian nature of blushing, which can not be feigned, and which is, therefore, a mark of genuine sincerity of feeling. I believe that the union of bashful young couples is hastened on account of the very fact that their embarrassment gives mutual impressions of sincere regard, while the debonair conduct of the "highly cultured" pair tends to the opposite effect, on account of mutual impressions of insincerity.

In the first place, fear is a powerful emotional stimulant, as are its refined modifications—bashfulness, timidity, and the like. The young man who feels timidity or embarrassment is likely to act with corresponding force and effectiveness. His movements may be paralyzed temporarily, but, if so, there will be a reaction later that will deepen his reflective experiences and lead him to *do something decisive*. "The effect of emotion upon the train of ideas," says Wundt, "is accurately reflected in external move-

ment. . . . The excitent emotion quickens ideation and involves heightened mimistic and pantomimic movement."*

The isolated country youth is late in his social development, but this very fact may prove advantageous to him. When he comes into the social gathering, say a party once a fortnight, he is green and awkward. Emotions stir his soul to the very depths. He stumbles and falters and blushes and perspires. The period of childish embarrassment has lingered so long with him that nothing short of a long-continued, soul-stirring experience will subdue this emotion and turn it to his better account. He is not only temporarily wrought up, but he also *lives the experience over in memory during the subsequent hours of isolation*, and meanwhile he experiences "deep yearnings for the unattainable," and forms many secret resolutions that make for better character and nobler worth. Here is the battle-ground of his most telling victories for the future. He "fights many an inner fight," and goes to the next social gathering with renewed confidence, but perhaps to suffer only a less degree of agony.

It is needless to say that during all this time, both in society and out, this typical swain experiences vigorous exercises of many of the bodily functions.† The blood flows faster, the heart beats quicker, there being occasional palpitations, and other of the life processes are accelerated. "During the emotion of sexual love, the circulation is accelerated sometimes to an extreme degree, the respiration likewise; and they react on the organic function."‡

But what of the blasé youth? The noises in the street, the runnings to and fro, the multitude of human gazes, both strange and familiar, have played upon his tender sensibilities till he is no longer emotionally responsive. Nothing short of a high-keyed orchestra playing "rag time," or a dazzling circus procession, or a brilliant pyrotechnic display, will ever touch him again. It is most lamentable, but he has lost his various modes of social sensitiveness—real virtues that *ought to have stayed with him till the reflective period was reached*, in order to regenerate and refine his thinking.

*Human and Animal Psychology, p. 372.

†See Darwin, Expression, etc., p. 334. For origin of this type of experience, see p. 326 of same.

‡Ribot, Psychology of the Emotions, p. 249.

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LOCAL NOTES.

Professor Walters has sold his old suburban home to Edwin Haid, of St. George, Kan., who intends to move to Manhattan to educate his children.

Professor Kammeyer will read a paper on "Coöperation as Applied to High School Work," before the annual session of the North Central Kansas Teachers' Association, at Salina, on Thanksgiving day.

Professor McKeever will attend the annual session of the Northwest Kansas Teachers' Association, to be held at Oberlin on Thanksgiving day. He will read a paper on "Love and Rivalry as Factors in the School."

A number of students enjoyed a camp-fire party on Mont Prospect, south of the Kansas river, last Monday night. They ate roasted apples and potatoes, drank two big jugs of cider, sang songs, and had a good time generally.

A. L. Anderson, student in 1882-'83, visited the College recently. He is now interested in oil stocks, and is located at 400 Johnston Building, Cincinnati, O. After an absence of twenty years Mr. Anderson found very little about the College, and very few that he knew among the College officers.

The new College poultry-house is progressing rapidly. Contractor John Winter hopes to complete the building in a little over a week. It will be the largest and best arranged poultry-home in the State and the INDUSTRIALIST will some day publish a description of this unique modern structure.

While hunting last week, some boys near Leonardville killed an enormous white bird of the pelican family, measuring eight feet three inches from tip to tip and six feet from the end of its bill to the tip of the toes. The bird is pure white except the edges of the wings, which are bordered with black. It has been donated to the College museum.

The annual convention of American Agricultural Colleges and Experiment Stations will be held at Des Moines, Iowa, November 1 and 2. Special rates are promised by the leading hotels of Des Moines, and special World's Fair rates, with stop-over privileges, will be given to those wishing to attend. Pres. E. R. Nichols will represent this College and take part in the program. He will discuss the subject of "Military Training in the State Agricultural Colleges."

The campus is still in its full glory. The frosts have not killed the leaves, as yet, and every shade and line of the artist's palette is represented in the groups and belts of the arboretum.

A reward of twenty dollars will be given to the person submitting the best College yell. All yells submitted must be unsigned and enclosed in a sealed envelope, marked plainly on the outside, "Proposed College Yell." This envelope, together with another sealed envelope containing the writer's name and address, shall be enclosed and addressed to "The Chairman of the Committee on College Yell, K. S. A. C." The committee, composed of members elected by the different College societies, reserves the right to reject any or all yells. All yells must be submitted on or before November 21, 1904. This offer is open to everybody.

Last Thursday afternoon a handsome monument was dedicated in the City Park to the memory of the Indian chief, Tatarrax, who ruled over this section of Kansas three hundred sixty years ago and assisted the first Spanish explorers with food and protection. The Citizen's Band furnished the music. J. V. Brower, president of Quivera Historical Society, gave the principal address; Prof. E. E. Blackman, state archeologist of Nebraska, also spoke. The presentation of the monument to the city of Manhattan was made by Capt. Robert Henderson, of Junction City, and Dr. C. F. Little made the speech of acceptance. The College cadets fired the salute as the monument was unveiled.

ALUMNI AND FORMER STUDENTS.

W. O. Peterson, '97, is principal of the Ogden schools this year. He visited the College last Saturday.

S. N. Higinbotham and Anna (Hanson) Higinbotham, '98, are the happy parents of a baby daughter, born October 22, 1904.

Stella (Kimball) Tucker, '94, is visiting her parents, Mr. and Mrs. R. H. Kimball, and her sister, Bertha (Kimball) Dickens, '90.

Mamie Alexander, '02, is reported to be much improved in health by her present temporary residence in Colorado City, Colo.

Cards are out announcing the marriage of Ary C. Johnson, '98, and J. A. Butterfield, '99, October 23, 1904. Mr. Butterfield is a postal clerk on the Union Pacific railway and runs from Salina to Kansas City. They will make their home in Salina, where the best wishes of many friends follow them.

F. A. Waugh, '91, sends us a copy of Technical Bulletin No. 2 of the Hatch Experiment Station of the Massachusetts Agricultural College. It is a handsomely illustrated bulletin describing a study of "The Graft Union," showing how closely the cells of the cion and stock may be united in the graft, though nevertheless there is no actual coalescence of the cells of the one with the cells of the other, and new layers of wood from each remain distinct.

C. F. Kinman, 1904, was lately elected assistant in horticulture in the State Agricultural College of Alabama.

C. E. Hamilton, sophomore student last year, is now located on an up-to-date dairy farm at Chazy, Clinton county, N. Y.

The Kansas City Veterinary College has shown its appreciation of the ability of Dr. A. T. Kinsley, '99, by raising his salary handsomely, when it appeared likely that he would be called elsewhere. Doctor Kinsley teaches anatomy, histology, and bacteriology.

E. C. Thayer, '91, is to be addressed at 3224 Bryant Street, Denver, Colo. He is busy with his high-school work, and in addition teaches mechanical drawing in the Central and Railroad Young Men's Christian Associations of Denver. He always has time, however, to greet friends from the College and finds much pleasure therein.

Bertha (Winchip) Spilman, '91, and her husband, W. R. Spilman, are visiting relatives and friends here. Mr. Spilman has returned from Washington in order to perform the duties of citizenship at the next election. On their way they visited Mrs. Winchip, at Peoria, Ill., finding her well and somewhat less burdened with work than in previous years.

The following items are taken from the *Jayhawker*:

Emma Doll, '98, of Larned, Pawnee county, is a candidate for county superintendent on the fusion ticket.

Mr. and Mrs. C. F. Doane, '96, of College Park, Md., announce the birth of their son, "Walter," on September 22, 1904.

O. N. Blair, '04, of Lyndon, Kan., has been elected to the position of instructor in mechanical drawing at the Michigan State Agricultural College.

"Louise Frances" is the name of the little daughter who came, on September 14, to the home of W. R. Smith and wife, Bertha (Spohr) Smith, '98, of Garnett, Kan.

K. P. Mason, '04, instead of going on to Kansas City as he had planned, stopped at Topeka and is attending the Kansas Medical College there. His address is 418 West Seventh street, Topeka.

The announcement has been received of the marriage of Mr. William Guy Tulloss, '99, and Miss Emma Cramer. The wedding occurred on Tuesday evening, October 4, at Douglass, Kan. They will live on a farm near Rantoul.

Chas. A. Pyles, '04, helped the Horticultural Department harvest its grape crop and made himself useful generally until about the middle of September; then he went to Topeka to fill the place made vacant by the resignation of N. L. Towne, '04, at the Industrial School for Boys, Topeka. N. B.—He will be an *instructor*, not an *inmate*.

Historical Society

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NO. 7

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ISSUED WEEKLY BY

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♦ ♦ ♦

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THE INDUSTRIALIST.

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MANHATTAN, KAN., NOVEMBER 5, 1904.

No. 7

SOME ASPECTS OF SOCIAL SENSITIVENESS.*

With Special Reference to Bashfulness.

(CONCLUDED.)

Having now touched upon the origin and practical value of certain forms of social sensitiveness, let us examine at closer range some phases of the struggle of the "youth of greener sort" to overcome these manifestations. What I desire to emphasize more fully here is a fact that has been too much in the background heretofore, namely, the great value, in character building, of this sensitiveness to the individual who is in what might be called the later formative period of character—provided these various modes of emotional experience have been preserved to him to that time. All such emotions and the reflective experiences that follow greatly enrich the mental life of the individual, and spur him on to attempt to reach a more satisfying adjustment to his social environment.

While all forms of emotional response to other presences are no doubt accompanied by a good deal of self-consciousness, I believe that the reflective period that follows is one of much greater consequence to the individual. During the emotional attack, sober initiative is, of course, out of the question.† But when one holds this post-emotional experience up before his calmer judgment, in memory, the true situation is more nearly seen, and readjustments for another such occasion are made out. Now, if the individual is able at this point persistently to imagine himself in a more ideal relation to that formerly embarrassing situation, he is in the beginnings of what I call one of the most fruitful forms of auto-suggestion. Right here is accomplished a great work upon his character. A concrete illustration will make this clearer.

Suppose an extremely bashful young man at a party, suddenly thrown into the company of a young woman who, to him, has a

*This paper was presented for the degree of Master of Philosophy at the University of Chicago, August 1904. A fragment of it appeared in the *INDUSTRIALIST* May 7, 1904.

†Darwin, *Expression of Emotion in Men and Animals*, p. 233.

"peculiar presence." At once there are terrible surgings to and fro of his life-blood. Palpitations and stoppages of that storm center, the heart, alternate. He is hot and cold by turns, and shortly afterwards carries himself off the scene limp as a reed, and bathed in a cold perspiration. During the second sober thought that follows his recovery, this verdant youth fights many a fearful foe within his own breast; and, if he is going to be saved at all, wins in imagination as many victories. These ideal responses, thought out and repeatedly gone over in mind during this interval, are certain to be actualized in some degree, at the very first opportunity. Thus the young man learns to "spark" while alone, similarly as one, according to James, "learns to skate in summer and to swim in winter." Thus to subdue the embarrassment by degrees is to refine the expression of the emotion, which really lives on and serves its purpose.

The experience of beginning business is analogous to this, in the case of many a young man. Some years ago I watched a case of this kind through all the stages of its progress. This young man was trying to establish an agency, and was lacking in both tact and "nerve." His emotional experiences were both deep and strong, and his afterthought correspondingly intense. He made many attacks and retreats before any promise of success came. I gave him some mild suggestions at first and, later, helped him to image himself to better advantage in the trying situation. Still later he was given a more definite lesson in auto-suggestion, and I had the pleasure of witnessing his increasing success during a period of a half year.

There is a marked difference in personalities. Even a little child will give evidence of this fact by his various methods of approaching strangers. While some attract him and win his confidence at once, others repel him. Some people seem to carry a sort of psychic atmosphere with them that impinges upon one's nervous organism. Go into an "august presence" and immediately you feel as if you had a "hang-dog appearance." The lower lip falls, the throat becomes dry, and your utterances are labored and more or less incoherent. The other fellow has you at his mercy, and you both know it. Again, you meet a person of weaker personality, and the effect is exactly reversed. As he grows weaker and less positive, you become stronger and more fluent; and, sometimes you almost feel keen pleasure in the punishment you are

giving him. At another time you meet one who is on your own psychic level, and there is, perhaps, a struggle for the mastery with the victory alternating. On still another occasion you come into the presence of one between whose personality and yours there seems to be no conflict. You are both at ease.

Some persons may never experience this form of the sense of other selves in any pronounced way, but I believe that, in the end, such experience is of positive advantage to the individual, for reasons given above, and for others. It may come in the presence of one or of many, in the drawing room, the lecture room, or in the form of stage fright.* In the ideal case, this emotional experience becomes a sort of refined habit, and it initiates a struggle within that leads to higher attainment and better and more forceful forms of expression.

What are some of the aids in this struggle for higher existence? (1) A merely mechanical one is appropriate wearing apparel. That is, the subject must not feel that his personal appearance draws out any adverse criticism.† (2) A clear conscience. The guilty conscience feels that its condition is revealed, and the psychic power is therefore lessened. (3) Rational self-confidence. And herein is implied practically the whole story. As the first and second points are simple and relatively unimportant, I will pass at once to the third. Of course it is only necessary to say that imitation is an element in all this readjustment. It is implied in all I have said about imaging the better situation. The one who simply images himself persistently as overcoming his sensitiveness, is practicing what I call unconscious auto-suggestion. Conscious auto-suggestion consists in this same thing, plus the knowledge of the nature and value of the process. Let us see how the matter operates.

Of course, it is not reasonable to maintain that simply imaging an act once will necessarily bring about its performance, although there is perhaps always a tendency to that effect. It is the *persistent repetition of the image* that counts for most here. The whole social world to-day is more or less under the influence of suggestion, and the greatest factor in it all is the modern newspaper. In every item of sensational news, and every advertisement, if properly written, there is a strong suggestion to act. According

*See Baldwin's interesting account of his own sensitiveness: *Social and Ethical Interpretations*, p. 205.

†See "Success," April, 1904.

as their natures and education may direct, many people take up these suggestions unconsciously and repeat them mentally many times until the situation or act suggested becomes intimate and *personal*. Thus the suggestion becomes *auto-suggestion*, and the tendency to act accordingly is made altogether more pronounced.

The imagination is not creative but inventive and constructive. The individual who is stirred emotionally experiences a fuller flow of ideas as to how to act, and that form of activity which appears, under the circumstances, to be most satisfactory is the one of which the image is most likely to persist. The longer and more frequently this image is entertained, the more likely it is to function in action. If I am stirred emotionally by some embarrassing situation, and finally frame in imagination an act that will relieve and atone for this embarrassment, I immediately become fond of this new image. It is entertaining and deeply satisfying and I entertain it again and again. Now while this act is repeatedly taking place in fancy it is being prepared for expression in fact. For the organism is concomitantly undergoing many of the processes that this act requires. Muscles, limbs, and vocal organs feel impelled to perform their respective parts of the act. I see myself in the appropriate bodily attitude, hear myself uttering the right words, and feel within semblances of the necessary organic experiences.

Laboratory tests show that the organism responds appropriately to the act, in the case of any intense imagination. The pulse beat is changed, the blood distribution is modified, and the muscular tension is suitably re-adjusted. So far as the psychology of the act is concerned, it is already performed. Unless some strong counteracting influence is set up, the outward expression naturally follows upon the presentation of the appropriate situation. The organism has become in large measure habituated to the new act through the repeated process of imagination. When one is embarrassed, the conduct tends to follow the course of the most deeply ingrained habit. This imaging process, then, is really the preparation of a new habit to inhibit and take the place of the old one. Backed up by emotional interest, as it is, this new habit gets the advantage and in time becomes stronger and more natural than the old one, when it may be left to perpetuate itself and to develop itself, through actual experience, into better form.

Thus the organism takes on and develops many of the most significant acts of life.

It is a well-authenticated fact that many persons are able to awake at an unusual hour in the morning, provided they determine to do so before falling to sleep the previous evening.* Undoubtedly the nervous mechanism is given in some way a "set," so that it sounds the alarm at the proper moment. It has been pretty well demonstrated that, "by taking thought" before going to sleep, one can prevent the occurrence of a disturbing dream that has been a regular nightly visitor. These are both merely forms of what has been called post-suggestion, *i. e.*, suggestions to be worked out in later processes. If these two forms are possible, why not others? If one can arouse himself from sleep at a certain time by post-suggestion, why can't he arouse his intellect to the solution of other specific problems in the same manner? I have proved to my own satisfaction that he can.

If, for instance, a high-school graduate has, say, to deliver a commencement oration and has forebodings of failure on account of stage fright, he can, most likely, prevent such a calamity by conscious auto-suggestion. While persistently imaging himself as succeeding most admirably, he must continue to affirm within himself about as follows: "*I will succeed! I CAN NOT FAIL! I shall be strong and self-possessed and clear-minded!*" He must continue this procedure until all thought of failure has vanished and the thought of success has completely possessed him. The remainder is both easy and natural. "As he thinketh, so is he." His success is practically assured. Titchener says: "Fix the attention steadily and intently upon some idea of bodily movement, and the impulse to do the act grows stronger and stronger until finally you can overcome it only by an effort."†

As the result of the mental and emotional experience related in the last paragraph above, a corresponding change will have taken place in the physical conditions. Instead of pains and quiverings in the region of the solar plexus, the fluttering, enfeebled heart-beat, and the other various constrictions of nerve and muscle (all of which likely accompanied the fear of failure) there is now an opposite condition in the life processes. The heart beats with vigor, the blood flows freely to the parts, and the intellect is clear

*James, Psychology, vol. 1, ch. ix.

†Outline of Psychology, p. 255-6.

and keen. In short, there is a full sense of masterfulness that is at once a joy and an inspiration to its possessor.

This one case illustrates the method in them all, whether in social life or in business. This work cannot be accomplished at one trial or in a day, but it must become more and more a rule of practice—a habit of life. The sensitive young person who becomes adept in this mode of procedure, becomes day by day more enabled to create the world anew to his own liking.

James, in his chapter on the Will, also says much that is in harmony with this sentiment. But he does not call it imaging, which it really is.*

But I am aware that there is a negative aspect to this whole subject. For a time at least, after the individual first experiences the sensitiveness, there is often an affect that resembles temporary paralysis. In all such cases, it would seem at first glance that the result is anything but beneficial. We will now examine some of these cases more closely.

1. Under influence of great fear, the organism sometimes collapses.† Indeed, there are on record cases of some animals, and even of some people dying from sheer fright. These are not, however, cases of fear of people but fear of things. By introspection and by analogy, we can judge, however, that fear of persons may have a paralyzing effect in the case of timid children.

2. We are better acquainted with the depression of spirits, so called, that sometimes follows adverse criticism, or an affront of some other personal nature. There is a sense of weight about the heart, the circulation seems sluggish, and the thought processes are retarded. Titchener, in his *Experimental Psychology*, shows that under all ordinary circumstances of unpleasantness, the physical strength is reduced. We all know, too, that under stress of embarrassment, one's normal mental operations are confused.‡ One's normal physical acts are inhibited also. I am reminded here of the story of the young man who intended to ask a certain young woman for her company, but who "got the blamed trembles so bad he couldn't ask her." Many school children, and even some college students, suffer so acutely from timidity that they cannot recite, at least not creditably. Such instances are com-

*See his *Psychology*, Briefer Course.

†"In fear the skin is pale, the breathing shallow and hurried, the pulse weak and irregular, and the muscular strength diminished." Titchener. *Outline of Psych.* p. 235.

‡Darwin, *Expression of Emotions*, etc., p. 323: "Most people while blushing have their mental powers disturbed."

mon. Two cases of this kind have received my personal attention. The first was a little seven-year-old school girl, C. H., who, on account of timidity, could not be induced to recite or say a word during the class exercises, for a term of three months. The second, F. J. H., was a young freshman college student who came to me three times and asked to be hypnotized as a treatment for timidity. His was an extreme case. When called upon to recite, he would usually stand and tremble; and, after a faltering effort, drop into his seat in a state of collapse.

3. The sting of defeat in the case of school children and others, when they fail in intellectual contests, has the same physically depressing effect as described under 2 above, which is enough alone to place the ordinary school contest under condemnation. The defeated child is likely to lose something of his power of initiative, and he will likely formulate permanent mental images of himself in defeat, and thus retard his own progress. No child is very likely to rise above his dominant idea of himself. Not long ago, the writer gave an address as the closing number of an all-day program which was made up mostly of contests. Many districts in the country sent one or more representatives to contest for the prizes in arithmetic, declamation, singing, and the like. The battle raged all day and was exciting. All the ordinary rules of order and decorum were violated, as the relatives and other admirers of the contestants crowded around and "sicked 'em on," while the poor little creatures worked despairingly. Quarrels and sharp charges of unfairness were not infrequent in the audience. Fourteen months later, I met the father of one of the vanquished, and he was still full of spite as he related how they "cheated his thirteen-year-old daughter out of the prize." The latter has quit school as a result.

4. It is evident that there can be too little exercise of social sensitiveness during the growing period. According to the theory of this paper, this embarrassment ought to be gradually worn off, until, at maturity, it disappears in form of refined modification. (See p. 87.) We see many instances of this under-development in people around us. Such people proceed with fear and trembling in an ordinary social gathering, and experience intense stage fright whenever they try to perform in public. Unless these embarrassing emotions are gradually subdued by practice that is well nigh enforced, the inhibitory processes will, in time, gain

complete mastery, and action will become practically out of the question.

To make this point clearer, a concrete situation will be described. Suppose a general meeting be called to consider matters regarding civic improvement, and that some familiar subject is proposed for general discussion. Only a few of those present will speak. Many others, who scarcely dare to stand in their places on account of timidity, will work out in their minds the wording of a few remarks, and will experience various painful organic disturbances, such as tremor, palpitation, agitated respiration, etc., winding up with a cold perspiration, and a feeling of being glued to the seat. People in such condition, whether old or young, are at the "danger point," and nothing short of violence will ever restore their expiring volitions. As time goes on, the impulse to act becomes less pronounced and the emotion less violent, till finally the individual lapses into a state of "innocuous desuetude" and becomes merely a quiet witness of the proceedings.

It seems to me that the duty of the teacher is very clearly implied here, viz., so to direct the exercises that the child may have a reasonable amount of practice in active response in the various embarrassing situations. The volitions must be exercised sufficiently to overcome the inhibitions if development is to go on rightly. These inhibitions are like temptations—better present than absent, *if overcome*, as they add force to the character and emphasis to the conduct.

My final word here is that in all these negative cases there is present the beginning of the usual impulse or tendency to novel and intensified forms of action, but the inhibiting process simply gains the mastery, and this condition of affairs in time becomes habitual. Relative to such situations, Professor James says: "One liability of such arcs is to have their activity inhibited by other processes going on at the same time. It makes no difference whether the arc be organized at birth, or ripen spontaneously later, . . . it must take its chance with all the other arcs, and sometimes succeed and sometimes fail, in drafting off the currents through itself."*

To summarize briefly, I have tried to reach the following conclusions:

1. Social sensitiveness, in the case of children, is likely to initi-

* Psychology, vol. 2, 391.

ate many new forms of physical movement out of which there are developed various new adaptations. It is an irreparable loss for children to become blasé.

2. In the case of youths, this sensitiveness is the occasion of much reflection, during the process of which the individual works out in imagination many new forms of better response for the future.

3. The sensitive emotions that accompany the pubescent period are especially stirring, and they are certain to initiate many new efforts in behalf of a better personal appearance.

4. This sensitiveness is an essential condition of normal development of character, and it should be present in some form during the entire formative period.

5. There are certain morbid aspects of this question, *i.e.*, negative ones, in case of which the inhibitory process somehow gets the upper hand and becomes habitual.

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LOCAL NOTES.

The new Auditorium is ready for the seats, electric lights, and steam radiators.

The Department of Entomology has lately added to its equipment two hundred Schmitt insect boxes and a new wall case for displaying them.

Professor Walters will deliver an address before the annual meeting of the Swiss Americans of Northern Kansas, at Marysville, November 19.

The members of the Faculty who have athletic inclinations have started a basket-ball club. They will play in the Girls' Gymnasium two times a week, after 3 o'clock.

The mid-term examinations were held to-day and the professors and teachers are busy over examination papers and class records, figuring out low grades and failures.

Two pelicans and a raccoon have lately been added to the museum of natural history. Professor Popenoe will have them mounted and ready for exhibition in a few months.

Prof. R. R. Price and his father, F. M. Price, went to Baldwin Tuesday to be present at the wedding of Professor Price's brother Murray. Murray was a student here in 1898-9.—*Daily Republic*.

The many friends of Professor and Mrs. Clure, recently of this institution, will be glad to hear that they are rejoicing in the birth of a son, October 11, 1904. Professor Clure is now filling the chair of Oratory in Lawrence University, Appleton, Wis.

The College students behaved nicely last night. Hallowe'en passed off quietly. There was but one special police on the force. President Nichols gave the students a heart-to-heart talk in chapel the other day, which seemed to have some effect. The authorities were pleased with the conduct of those who were out for a good time on Hallowe'en night.—*Daily Republic*.

The thirty-seventh annual meeting of the Kansas Academy of Science will be held in Topeka, Thursday, Friday, and Saturday, December 29, 30, and 31. Railroads will sell round-trip tickets to Topeka at holiday rates. The dates are arranged so as to conflict as little as possible with the meetings of the State Teachers' Association. It is sincerely hoped that all persons interested in science in this State will make an effort to attend this year.

Prof. D. E. Lantz, who is now in the employment of the United States Department of Agriculture, has just returned from a ten-days' trip to Lawton and Chattanooga, Okla., where he experimented on coyotes. The object of the experiment was to find the cheapest kind of coyote-proof fence for sheep men. He expects to return to Chattanooga on the twenty-fourth of this month to be present at a sheep breeders' meeting.

Since the resignation of Mr. E. D. Lantz, as superintendent of the prairie-dog poison laboratory a month ago, this branch of the Experiment Station has been placed in charge of the Department of Entomology and Zoölogy. Professor Popenoe reports that orders for poison are coming in every day and from all parts of western Kansas. The rodent reproduces itself so rapidly that, notwithstanding the many car-loads of poison which the College has sent out the past four years, millions of the animals will have to be killed every winter and spring.

The recent organization in this institution of a four-years' course in architecture has been favorably commented upon in many unexpected quarters. Many letters like the following have been received by the department. Mr. A. E. Blair, '99, writes: "I note with pleasure that a course of architecture has been added to the list of College courses. This course will be appreciated by many. My regret is that I could not take such a course when I attended College. I have since taken up the work, and during the past ten months I have been busily employed in this office."

Mrs. Platt has sold her home property, consisting of the large, brick residence and ten acres of land, on College Hill, to J. Neider. The Neider family, who have been living upon the Himes place, are moving into the Platt residence. Ed. and Mel. Platt, of St. Joe, Mo., came last week to assist their mother in closing up her business affairs. They left for home Saturday, accompanied by their mother, who will make her home with Ed. The Platt family have been residents of College Hill many years, and no family has had more friends in this community. Professor Platt was a member of the K. S. A. C. Faculty nineteen years.

The Hon. Ed. Hoch, of Marion, escorted by members of the Manhattan Commercial Club, made a flying visit to the College last Friday noon. He had but few minutes to spare between two trains, and could not speak in the city. When it became known, however, that he would visit the College the students and members of the Faculty requested his friends to ask him for a short speech, and he responded from the steps of Anderson Hall. He told the assembled young Kansans that he would rather have a college education than a fine farm or great wealth, and referred them to the history of this country as a proof of the fact that the great inventors, statesmen, army leaders, philosophers and philanthropists are generally the sons of poor parents. He praised the work of the College, and said that the schoolhouse was the most precious capital in which a country could invest.

George Thompson, of the Department of Agriculture, Washington, D. C., for many years a member of the Faculty of this College, was a visitor in chapel on Thursday morning and responded to an invitation to talk to the students from the rostrum. He spoke of the influence of the College upon the home life and business life of the State, and was heartily applauded by the students. Mr. Thompson is looming up as a candidate for the position of United States Secretary of Agriculture. He has the united support of his State and of many prominent members of Congress, and if Roosevelt is reelected President will undoubtedly come very close to the portfolio.

The officers and advanced students of the Chemical Department conduct a journal meeting which holds a session each Thursday afternoon at 3:30. The object of these meetings is to listen to the presentation of topics embodying progress in chemistry as set forth in the chemical journals and new books. The subjects are presented in rotation by the officers and students, and participation in this is a part of the required work of the latter. In this way they acquire some conception of the vast amount of new chemical material that is constantly coming before the public, and the living growing character of this science. This weekly meeting has been conducted successfully for the last three years.

The Hon. Ed. Hoch, after the Kansas Editorial Convention at Manhattan, made the following remarks in the *Marion Record* concerning the Agricultural College: "Tuesday forenoon was devoted to a visit to the State Agricultural College, and the event was an eye-opener to most of the editors. It certainly was to us. It was our first visit to this really great school, and though we have been more or less familiar with its history and management for nearly a quarter of a century, the beauty of the site and environments, the magnificence of the buildings and equipments, the diversity and extent of the industrial features, the number and character of the students, the scope of the curriculum—in a word, the bigness of the institution was a revelation to us, and we think it was to most of the visitors. President Nichols and other members of the Faculty were very kind and courteous. The *Record* will be a better friend than ever, hereafter, of the State Agricultural College, and we will watch with increasing interest its growth and development, lending a helping hand, when we can, in the good work of its upbuilding."

The Chemical Department has recently analyzed three samples of sugar-beets produced at the Fort Hays Branch Station in an experiment conducted in coöperation with the office of Experiment Stations of the Department of Agriculture. One plat was thoroughly irrigated in the latter part of the winter, another was irrigated in the summer, and two others received no irrigation. The plats receiving no irrigation yielded 14.25 tons per acre and the beets contained 14.15 per cent of sugar in the juice, with a coefficient of purity of 79.8. The plat given winter irrigation yielded 16.52 tons per acre, the beets contained 13.91 per cent of

sugar in the juice, and the coefficient of purity was 78.1. The yield of the plat given summer irrigation was 19.57 tons per acre, the sugar in the juice, 12.71, and the coefficient of purity, 79.4. These figures show very favorably in respect to the possibilities of sugar-beet production in that region. Each plot was one acre in area and the total yield was 64.6 tons. The beets will be used in a feeding experiment this winter.

ALUMNI AND FORMER STUDENTS.

G. W. Hanson, '00, stopped off at Manhattan, on his return from the Fair, to visit with friends for a few days. Mr. Hanson is at present engaged in the foundry business at Marquette, Kan.

Hartley B. Holroyd, '03, has entered the University of Michigan and is taking the course in advanced forestry. He will have his degree in the spring. The courses in Michigan State University are thorough, and Mr. Holroyd is greatly pleased with the work.

The friends of Ivan Nixon, ['03] will be sorry to learn that he is lying very low with typhoid fever in a hospital in Albany, N. Y. His father left for Albany Friday, and his mother started last evening, being summoned by a telegram. This morning a telegram was received by W. H. Donaldson saying, "Stop Mrs. Nixon." The supposition is that Ivan is better.—*Nationalist*.

David G. Fairchild, '88, is the author of bulletin No. 51, Part IV, of the Bureau of Plant Industry, upon "The Cultivation of the Australian Wattle." The wattle is a native of Australia, the bark of which is very valuable for tanning purposes. It has been successfully introduced into Natal, and the object of the present bulletin is to suggest the possibility of introducing the tree into the Hawaiian Islands. It contains an interesting description of the mode of culture and manner of harvesting the bark.

John U. Higinbotham, '86, now cashier of the National Biscuit Company, of Chicago, is the author of a book entitled "Three Weeks in Europe," the following notice of which appears in the *Nationalist*: "Two years ago he and his wife went to Europe and took what the author calls a 'Busy Man's Vacation.' Mrs. Higinbotham carried a camera. The results of the keen observation and the artistic photographic work of Mr. and Mrs. Higinbotham are brought together in a tasteful 12-mo. volume of 275 pages. It is delightful reading from the first page, with none of the guide-book dullness. It has the personal, gossipy flavor that enlists the sympathy of the reader. Best of all, it is enlivened by touches of humor at every turn. Traveling with such a companion, though only through the mediumship of the printed page, is the best of recreation. The experiences of the voyage form an introductory chapter that sharpens the reader's interest in what is to follow. Then comes the landing at Naples and the journey through Italy and Switzerland, down the Rhine to Paris, and then across the Channel, and back home. The motive of the book

is to show the busy man how much he can really see in a short vacation in Europe. But it will accomplish a broader purpose than this. It will help a large number of stay-at-homes to enjoy the fireside travels that might otherwise lack something of color and reality. 'Three Weeks in Europe' is well printed, and is attractively bound. It is published by Herbert S. Stone & Co., Chicago." Mr. Higinbotham was an easy and pleasing writer when a student and one can readily believe that he has made an interesting book.

Mark A. Carleton, '87, is the joint author of bulletin No. 70 of the Bureau of Plant Industry, which treats of "The Commercial Status of Durum Wheat." Durum wheat, somewhat unfortunately, has become most widely known as macaroni wheat, having been introduced under the latter name because it is the only wheat that will make first class macaroni. This manufacture was treated in bulletin No. 20 of the Bureau of Plant Industry. The present bulletin contains a large number of receipts for cooking macaroni, knowledge concerning which is said to be very scanty in this country. The most interesting portion of the bulletin, however, is devoted to a statement of the results of experiments in bread making from durum wheat. The combined judgment of over two hundred persons was obtained in respect to the qualities of bread made from durum wheat as compared with bread made from northwestern spring wheat, all other conditions being as nearly the same as possible. About four-sevenths of these persons gave an opinion more favorable to the bread made from durum wheat flour. The bulletin also contains tables of numerous analyses of flour and wheat, and much other interesting matter bearing upon the subject. It will be recalled that Mr. Carleton introduced this wheat into this country, and the present extensive production of it is due chiefly to him.

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TWO CENTURIES OF EUROPE IN OUTLINE.

MODERN Europe may be said to date from the Congress of Vienna, which marked the close of the Napoleonic wars in 1815. It was prefaced by the long series of wars, sometimes called the second Hundred Years' War, between England and France. This was, especially in the latter part, a great world contest for colonial and commercial supremacy. The series began with the War of the Palatinate, known in America as King William's War, 1688-'97, by which William of England checked the ambitious Louis the Fourteenth of France. The Peace of Ryswick which closed this war was little more than a truce, and in 1702 there began the world-wide struggle known as the War of the Spanish Succession—in America, Queen Anne's War. This was closed by the Peace of Utrecht, 1713, and the treaty of Rastadt, 1714. Among the results of the struggle we may note especially the cession to Austria of the Spanish Netherlands and to England the French possessions of Newfoundland, Nova Scotia and the Hudson Bay Territory in America, and Gibraltar in Europe. We pass without comment the next war, that of the Austrian Succession or King George's War, 1744-'48.

Thus far the wars had been distinctly European, but the next was as distinctly of American origin. This is known in America as the French and Indian War. In Europe it is called the Seven Years' War, where it lasted from 1756 to 1763. In America, however, it began as early as 1754, reached its climax in 1759, and was ended several years before the treaty of Paris closed the struggle in Europe. At the opening of this contest we find one of the most remarkable diplomatic revolutions of the century. France, since the time of Richelieu and Louis the Fourteenth, had striven steadily to destroy the power of the Austrian Hapsburgs. But now England and Prussia had formed a close alliance, so that it was necessary for France to ally herself with Austria in the great struggle for colonial supremacy. The result of the war was ab-

solate defeat for France and glorious victory for England in both hemispheres. At the opening of the war France owned practically all of Canada and had a good claim to the whole of the Mississippi valley. At the close of the war she owned only two small islands in the Gulf of St. Lawrence. Canada and the territory east of the Mississippi went to England. The territory west of that river went to Spain, as compensation for the loss she had sustained in assisting France. England also secured Florida in exchange for Cuba and the Philippine Islands, which she had captured from Spain during the war. In the eastern hemisphere France had to surrender her Indian possessions to England, and of course England now had won undisputed commercial supremacy on the seas.

The fire of battle was next lighted in the American Revolution, where France gained some revenge by aiding the colonies to gain their independence from England. This war, closing in 1783, was followed by the French Revolution, which opened six years later. Throughout this struggle and the Napoleonic wars that followed, England was France's most inveterate and unconquerable enemy until Wellington conquered Napoleon at Waterloo, June 18, 1815.

There is a sense in which "the victory of Wellington at Waterloo was the triumph of mediaeval privilege over modern democracy." The monarchs of Europe, either in person or by their representatives, now met in Congress at Vienna for the purpose of restoring Europe to the social and political condition that preceded the French Revolution. Legitimacy was the predominant note of this gathering. Monarchs were everywhere restored to their thrones with restored boundaries and restored privileges—at least that was the plan of these sovereigns in Congress assembled, directed by Prince Metternich, of Austria, himself the very soul of despotism. It is well to remember, however, that while the Congress of Vienna seemed so reactionary yet it is true that the French Revolution and the Napoleonic wars had accomplished some things that even Holy Alliances could not completely suppress. Among these acquisitions were the principle of equality, the principle of popular sovereignty, and the principle of nationality. These principles showed themselves in 1830, in 1848, and in 1871, as well as at other less important dates.

Before taking up the story of Europe since 1815, it is interesting to note some of the settlements as to boundaries and the dis-

position made of various nationalities by the assembled sovereigns. At this congress Austria surrendered the Netherlands, which was united to Holland under the name of the Kingdom of the Netherlands. This arrangement lasted only until the revolution of 1830, when the independence and neutrality of Belgium was guaranteed by all the great powers. As compensation for the loss of the Netherlands, Austria was given lands on the eastern shore of the Adriatic, together with Lombardy and Venetia in northern Italy, thus gaining a foothold that proved very disastrous to Italian nationality. Denmark lost Norway, which in turn was united with Sweden in a dual monarchy—an arrangement that is still in effect. It was in this congress that Russia was confirmed in her possession of Finland. Among the acquisitions of England were Malta in the Mediterranean from France, and Cape of Good Hope and British Guiana from the Dutch, "Switzerland was given three additional cantons, one of which was the former republic of Geneva, which brought the number of cantons up to twenty-two, and the independence and neutrality of the little federal state was guaranteed by all the European powers."

To understand the history of Europe since the Congress of Vienna, an outline of the events occurring in France is essential. The Congress of Vienna had restored the Bourbons in the person of Louis the Eighteenth, but with the requirement that he should grant a constitution. Louis died in 1824 and was succeeded by his brother, Charles the Tenth. Within six years this king attempted to revoke the constitution and restore absolutism. The result was the July revolution of 1830 in France. Charles fled to England, Louis Philippe was crowned king, and a new constitution was proclaimed. This revolution of 1830 spread to the people of nearly every nation in Europe. It was the first general revolt against the absolutism of the age of Metternich, which followed the Congress of Vienna. These popular movements were generally suppressed without accomplishing any lasting result. They gave promise, however, of renewed efforts in the same direction.

Louis Philippe ruled France for eighteen years, but failing to conform to the popular demands of his subjects, he in turn was compelled to flee to England, and the second French republic was established. Thus was started the European revolution of 1848,

in which the people once more demanded popular and national governments. Metternich was driven from Vienna and a constitution promised to Austria. Prussia secured a constitution and Germany tried, but without success, to form a national government. Italy attempted to drive out Austria, but failed. In Europe, generally something had been accomplished for constitutional government and national life.

But France was too radical. The socialists were strong enough to establish their national workshops, which proved a miserable failure. Reaction was, perhaps, inevitable. Louis Napoleon was elected president of the new republic, but he so managed affairs that in 1852 he was able to assume the title of emperor. Chiefly for the purpose of establishing himself on the throne, he strove to renew the military glories of the name Napoleon by engaging in the Crimean war, which proved successful but very costly. This was followed by the still more successful Italian war of 1859, by which Austria was driven out of most of northern Italy by the combined French and Sardinian troops. Napoleon now tried to establish Maximilian on a Mexican throne, but at the close of the American Civil War he was promptly compelled to withdraw. Desiring to retrieve his military reputation, he next precipitated the Franco-Prussian war of 1870-'71, but here he was overwhelmingly defeated, being compelled to surrender to Germany the Alsace-Lorraine provinces, and pay a war indemnity of a billion dollars. Napoleon's empire was promptly overthrown and France established her third republic—the government which has lasted to the present time. This has met with varying fortunes, but apparently it is growing in power and increasing in favor.

The making of modern Germany is a most interesting story of nation building. At the beginning of the Napoleonic wars the Holy Roman Empire, as Germany was still properly called, consisted of some three hundred, more or less, independent states. In 1806 Napoleon put an end to this shadow of the Middle Ages, and when Germany was reconstructed in 1815, the number of states was reduced to twenty-eight, including Austria and Prussia. It was the jealousy and rivalry, especially of these last two states, that made it impossible to form a nation. The years 1830 and 1848 passed without a nation's birth. In 1861 there ascended the Prussian throne a King—William by name—who the next year called to his support a Prime Minister—Otto von Bismarck by

name—who was in truth a statesman. These two men have built the modern German state. The first opportune moment came in 1863-'64 when Schleswig-Holstein revolted from Denmark. Prussia and Austria together assisted these provinces to gain independence. Bismarck now carefully fostered a quarrel with Austria over the possession and control of the provinces. Finally, in 1866, the quarrel resulted in a war in which Prussia, aided by Italy, completely defeated Austria and expelled her from Germany. Bismarck now organized the North German Confederation and did nothing to discourage Napoleon from plunging into the Franco-Prussian war of 1870-'71. The complete and rapid victory of Prussia resulted at last in the birth of a nation, and on January 18, 1871, in the palace of Versailles, the victorious army and princes proclaimed King William of Prussia to be the Emperor of a united German Empire. Soon after this modern Germany was organized into a federal state, resembling in many respects the United States of America.

Thus ends another chapter of European history. It yet remains to tell briefly the story of Italy. The opening of the century finds Italy not only divided into numerous independent states, but occupied in part by foreign powers with conflicting claims as to right of possession. Italy was in very truth a mere geographical expression and the battle-ground of nations. To Victor Emmanuel, King of Sardinia, Cavour, his counsellor, and Garibaldi, his agitator and general, belong the honor of erecting here a state. The first great object to be accomplished in making modern Italy was to get Austria off of Italian soil. Victor Emmanuel and Cavour allied Sardinia with France in the Crimean war that they might claim the friendship of France in a later time of need. In 1859 Sardinia formed a close alliance with Napoleon and drove the Austrians out of the larger part of Italy. In 1866, with the aid of Prussia, Austria was driven completely from Italian soil. By this time the rest of Italy had generally united with Sardinia, except Rome. Victor Emmanuel had been proclaimed King of Italy, but they lacked the logical capital for an Italian state. The State of the Church was occupied and defended by French soldiers. When, however, in 1870, France needed every soldier at home, Rome, being at last conquered and taken from the church, became the capital of modern Italy. Such in very brief form is a sketch of the chief political changes and developments in western Europe during the last two hundred years.

RALPH R. PRICE.

ON LOGARITHMS.

HISTORY.—Logarithms were invented by Baron Napier, an English mathematician, in 1614. In his first published work he explains the nature of logarithms by a comparison between corresponding terms of an arithmetical and geometrical progression. He gives tables of the logarithms of sines and tangents of all angles in the first quadrant for differences of every minute calculated to seven places of decimals, with $e=2.71828$ as the base of the system. The use of this base made his tables inconvenient for practical applications, and Briggs, another English mathematician, made a decided improvement by using the base 10. In 1617 Briggs published a table of logarithms of numbers from 1 to 1000 to 14 places of decimals, and again in 1624 tables of logarithms of additional numbers and of various trigonometrical functions. In 1628 Adrian Vlacq, a Dutch bookseller, published the logarithms of numbers from 1 to 100,000. This table has been the standard ever since, and nothing of equal range founded on fresh computations has since been published. Some errors have been found therein. Bremiker's six-place tables, published in 1857, have been tested and found free from error. The latter work is perhaps as useful as any for most purposes. Besides the ordinary tables the so-called addition and subtraction logarithmic tables have been invented by Gauss.

PURPOSE.—Logarithms were invented in order to avoid lengthy and tedious numerical calculations, especially in multiplication and division. They are useful also in raising to powers and in extraction of roots. The addition and subtraction logarithmic tables enable one to find $\log(a \pm b)$ when $\log a$ and $\log b$ are known.

CALCULATION.—Napier's method of calculation was very laborious and depended probably upon either direct involution and evolution or upon the formation of geometrical means. Newton and Euler made use of a convergent series in order to find approximate values, and this is the plan in general use by subsequent computers.

IMPERFECTIONS.—As logarithms are only approximations to the truth, the results yielded will be slightly in error. Especially is this true when many computations are involved leading to an accumulation of errors. It has been found that the average error of a logarithm derived from the table by interpolation is .35 of a unit of the last place. In determining to what degree of accuracy

to carry a result the following practical rule should be followed: It is never worth while to carry decimals beyond the limit of precision given by the tables.

The theory of exponents as given in any elementary algebra lies at the bottom of the fundamental laws of logarithms. Strangely enough, however, Napier knew nothing of this portion of algebraic development and made his reasoning on a different basis. His discovery proved to be a great step forward in mathematics, as it caused those interested in the progress of the science to devote their energies toward developing ideas instead of engaging in tremendously long numerical calculations.

In the year 1875 there were in existence five hundred fifty-three logarithmic tables with decimal places ranging in number from 3 to 102. Seven-place tables are the most numerous; the early calculators favored 10 to 14 places of decimals, but it has been found that 6- or 7-place tables are far more convenient and insure sufficient accuracy for nearly all investigations.

B. L. REMICK.

SOME DAIRY COW RECORDS.

ON the 1st of March, 1902, it will be recalled that nine head of dairy cows selected by nine successful dairymen of the State started a twelve months' test to determine their relative standing as economic producers of milk and butter fat. This test was carried to completion and the results made public. It was watched with considerable interest by the dairymen of Kansas, and some valuable lessons have been learned from it. The cows composing the dairy herd previous to the selection and purchase of these nine cows had been selected at random and by a man who made no pretenses of being a dairyman. This herd of cows, it was found under proper care and feeding, contained some very good individuals. The number of poor or unprofitable cows, however, from a dairy standpoint was quite large. It is quite interesting to note the comparison between this selected herd, commonly called the "prize herd," and the other, or "scrub herd."

It was thought advisable to continue the record of the "prize herd" for a second year, and we now have the second year's record to report for these cows. The cows were judged, it will be remembered, by three experts: Maj. Henry E. Alvord, chief of

the Dairy Division, United States Department of Agriculture, Prof. A. L. Haecker, of the University of Nebraska, and Mr. T. A. Borman, of Topeka, Kansas. These experts placed the cows in the order in which their judgment indicated they would stand for economic production of milk and butter.

Table I, which follows, shows the relative production of these cows, the record covering the full two years.

TABLE I—RECORD OF COWS SELECTED BY DAIRYMEN (March 1, 1902, to March 1, 1903).

No.	Name of Cow.	Fresh.	Milk, lbs.	Average test.	Butter fat.	Rank.	
						Judges	Year's record.
243	Cowslip	Nov. 3, 1901 Jan. 10, 1902	6285.5	5.00	314.33	3	2
236	Haster	Dec. 10, 1901 Dec. 5, 1902	5563.5	4.85	274.89	1	4
244	Rose of Cunningham	Jan. 28, 1902 Jan. 29, 1903	8107.5	3.99	324.18	2	1
238	Clover Leaf	Jan. 12, 1902	5530.9	3.62	200.28	7	9
245	Molly	Jan. 20, 1902 Feb. 12, 1903	5096.9	4.36	222.30	5	8
241	Rose of Industry	Jan. 15, 1902 Feb. 12, 1903	5972.9	4.57	273.17	8	6
240	Daisy Belle	Apr. 3, 1901 May 3, 1903	6329.7	4.31	273.24	9	5
246	Floss	Oct. 3, 1901 Nov. 10, 1902	4230.0	5.95	251.90	6	7
242	May Queen	Dec. 25, 1901	4809.9	6.41	308.74	4	3
Average					264.78		

(March 1, 1903, to March 1, 1904.)

No.	Name of Cow.	Fresh.	Milk, lbs.	Average test.	Butter fat.	Rank.	
						Judges	Year's record.
243	Cowslip	Jan. 1903	6494.6	4.50	294.05	3	3
236	Haster (No record).					1	
244	Rose of Cunningham	Jan. 1903	8206.6	3.40	278.95	2	5
238	Clover Leaf	Feb. 1904	3943.6	3.49	137.81	7	8
245	Molly	Feb. 1903	4808.0	3.67	177.02	5	7
241	Rose of Industry	Sept. 1903	5055.1	4.29	217.86	8	6
240	Daisy Belle	Apr. 1903	7298.7	3.85	281.17	9	4
246	Floss	Sept. 1903	5270.3	5.61	295.75	6	2
242	May Queen	Feb. 1903	6781.6	5.47	372.22	4	1

Several of these cows are quite near together in butter fat production, and it will be noted that for the first year even the poorest cow produced over 200 pounds of butter fat. There were no cows yielding such small amounts as to be unprofitable in quite marked contrast with the "scrub herd," which fact goes to show that an expert can select cows to some extent by outward appearances. Some explanations will be required regarding the second year's record. One cow, viz., Haster, No. 236, is left out entirely.

She aborted early in the year and would not breed afterwards, consequently her production for the year was very small. It will also be noted that Clover Leaf, No. 238, freshened January 12, 1902, and was milked continuously for over two years without another freshening period. The failure to breed, of course, reduced her production to the low figures shown. Molly, No. 245, was dried up early in her lactation period in order to prepare her for market with a car-load which were being fed, it being decided that she was not of sufficiently marked dairy type and temperament to be kept in the dairy herd. The rest of the herd had a fair show the second year, and the result did not vary much from their first year's record. The cow May Queen takes a big stride to the front in the second year's record, which may seem odd to some, but it is easily accounted for by the fact that at the time the first year's record began she was over two months along in her lactation period and failed to breed so as to freshen before the year's record was complete. The average butter fat production for the six cows having fair tests the second year is 290 pounds, being somewhat higher than the average of the nine for the first year.

The average tests of the cows for the first and second years' records seem to vary more than is normal. This is easily explained by the fact that the record covers an arbitrary period of twelve months and the two records contain different portions of each cow's lactation period. By taking the average test of the cows for two succeeding lactation periods it will be found that the variation is very slight.

These cows were fed as nearly alike as possible during the first year's test. It was the aim to give each cow about all the roughness she could consume, and concentrates in addition, in proportion to each individual's ability to use it profitably. An exact record was kept of all grain consumed by each cow. It was impracticable to keep an individual record of the roughness consumed. All roughness was accurately weighed, however, and the total amount fed to the nine cows recorded. Some interesting figures bearing on the economic features of the test have been worked out. Table II, which follows, is the record of the feed consumed by these cows.

TABLE II.—FEED CONSUMED BY COWS SELECTED BY DAIRYMEN.

Name of Cow.	Grain Fed.			Roughness.								
	Bran	Corn-chop...	Total.....	Alfalfa.....	Kaff-corn stover	Green alfalfa	Cow-pea hay	Millet hay...	Ensilage....	Cut cane.....	Oat hay.....	Total.....
Cowslip	1524	45.9	1983	3295	924	110	324	596	601	681	63	6594
Haster	1569	47.4	2043	3295	924	110	324	596	601	681	63	6594
Rose of Cunningham..	1801	56.2	2363	3295	924	1 0	324	596	601	681	63	6594
Clover Leaf.....	1032	33.0	1362	3245	924	110	324	596	601	681	63	6594
Molly.....	1129	31.6	1445	3295	924	110	324	596	601	681	63	6594
Rose of Industry.....	1226	41.1	1637	3295	924	110	324	596	601	681	63	6594
Daisy Bell.....	1120	57.6	1696	3295	924	110	324	596	601	681	63	6594
Floss.....	1124	25.5	1379	3295	924	110	324	596	601	681	63	6594
May Queen	1475	52.7	2002	3295	924	110	324	596	601	681	63	6594

In this table no distinction is made as to the amount of roughness consumed by the cows. This seems hardly fair, as it could be easily seen that the large cows consumed more roughness than the small cows.

In Table III the total roughness consumed has been apportioned on the basis of live weight.

TABLE III.—ROUGHNESS CONSUMED BY COWS SELECTED BY DAIRYMEN IN PROPORTION TO LIVE WEIGHT.

Name of Cow.	Average live weight	Roughness consumed in proportion to weight.
Cowslip	1033	6924
Haster.....	866	5805
Rose of Cunningham.....	1233	8667
Clover Leaf.....	752	5040
Molly.....	1275	8546
Rose of Industry.....	1001	6709
Daisy Bell.....	977	6548
Floss.....	812	5443
May Queen.....	845	5664

Table IV is a complete financial statement of the first year's record. In figuring the cost of feed it will be noted that there are two columns, headed "Local" and "Farm." The local prices were exactly what all feed was worth in the market at the time. In the column headed "Farm," a uniform price of fifty cents per hundredweight and \$4.00 per ton is charged for all feed. Some differences in rank are made, according as the feed is figured at "Local" or "Farm" prices, due to the fact that the local prices changed from month to month.

TABLE IV.—FINANCIAL STATEMENT OF COWS SELECTED BY DAIRYMEN.

Name of Cow.	Debits.				Credits.				Returns less cost of feed.		Rank.	
	Cost of feed.				Butter fat at 21¢ per lb.	Skim-milk at 15¢ per cwt.	Value of calf at birth.....	Gain avoidupois at 4¢ per lb.				
	Grain.		Roughness.									
	Local...	Farm...	Local...	Farm...					Local...	Farm...	Local...	Farm...
Cowslip	\$19.21	\$ 9.91	\$25.29	\$12.73	\$66.79	\$ 9.23	\$5.00	\$2.52	\$33.60	\$55.46	6	5
Haster	19.79	10.21	21.20	10.67	58.41	8.52	5.00	1.20	32.14	52.35	7	7
Rose of Cunningham...	22.90	11.81	31.66	15.93	68.89	12.03	5.00	6.16	37.52	64.34	3	2
Clover Leaf.....	13.20	6.81	18.41	9.26	42.56	8.02	5.00	.88	24.85	40.39	8	9
Molly.....	14.00	7.22	31.22	15.71	47.24	7.73	5.00	5.00	19.75	42.04	9	8
Rose of Industry.....	15.86	8.18	24.51	12.33	58.05	8.80	5.00	7.08	38.56	58.42	2	3
Daisy Belle... ..	16.43	8.48	23.92	12.04	58.06	9.68	5.00	4.64	37.03	56.86	4	4
Floss	13.36	6.89	19.88	10.00	53.53	6.16	5.00	4.56	36.01	52.36	5	6
May Queen	19.40	10.00	20.69	10.41	65.61	7.23	5.00	8.80	46.55	66.23	1	1

In table V the exact feed cost of producing one hundred pounds of butter fat has been calculated for each cow.

TABLE V.—FEED CONSUMED IN PROPORTION TO BUTTER FAT PRODUCED.

Name of Cow.	Butter fat produced.	Feed consumed.		Feed consumed per 100 lbs. butter fat produced.		Cost of feed per 100 lbs. butter fat produced.	
		Grain.	Roughness.	Grain.	Roughness.	Local.	Farm.
Cowslip	314.33	1983	6924	630.86	2202.51	\$14.16	\$ 7.20
Haster	274.89	2043	5805	743.20	2111.35	14.92	7.60
Rose of Cunningham...	324.18	2363	8667	728.91	2673.10	16.83	8.56
Clover Leaf.....	200.28	1362	5040	680.04	2516.43	15.78	8.03
Molly	222.30	1445	8546	650.02	3842.92	20.34	10.32
Rose of Industry.....	273.17	1637	6709	599.26	2455.86	14.78	7.51
Daisy Bell.....	273.24	1696	6548	620.69	2396.36	14.77	7.51
Floss.....	251.90	1379	5443	547.43	2160.38	13.20	6.71
May Queen.....	308.74	1002	5664	648.44	1834.28	12.98	6.61

In this table the relative value of each cow, so far as butter fat production is concerned, is readily seen.

It is to be hoped that the data obtained from this comparative test of dairy cows will be of some value to all Kansas dairymen, and especially to those who so kindly selected the cows. It may be well to add, in conclusion, that many lines of investigations are being carried on by the Dairy and Animal Husbandry Department, and the result of several year's work with dairy cows will soon be ready for distribution.

G. C. WHEELER.

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LOCAL NOTES.

The carpenter-shop is building a new magazine rack for the library.

The Music Department has had its pianos tuned. The tuning was done by Mr. Davidson, of Kansas City.

The College foundry has made a fine bronze base and cross for the communion table of the Episcopal church.

The lecture-course committee announce that Rabbi Harrison, the eloquent Jewish lecturer of St. Louis, will be here January 27.

Reliable parties are anxious to build a canning factory in or near Manhattan and have taken the proposition up with the Manhattan Commercial Club.

Assistant Harry Brown, of the Music Department, has received word that his mother, Mrs. A. B. Brown, of Leavenworth, Kan., is not improving and that there is but little if any hope for her ultimate recovery.

Prof. O. Erf and Assistant Melick assisted in giving a very unique banquet at St. Louis, the menu being made up almost entirely of dairy products. After the banquet the party inspected the model dairy and the dairy laboratories.—*Students' Herald*.

Prosperity has struck our neighbors of the Solomon valley. Herbert Loomis, a former student here, and two other boys, of Stockton, were visitors at the College Friday. They were traveling overland in a fine automobile which they had purchased while in Kansas City.

The College orchestra has the following membership this fall term: Violins—Miss M. Kahl, Miss M. Lane, C. L. Kipp, H. E. Ferguson; 'cello, D. Walters; bass, Geo. Wolf; trombone, A. J. Rhodes; cornet, A. J. Cowles; horn, H. E. Bixby; clarinet, F. W. Grabendike; flute, L. W. Lawson; piano, Miss Gertrude Lill; drums, F. W. Winters; director, Ass't R. H. Brown.

Dr. N. S. Mayo, who last summer accepted the position of chief of animal husbandry of the republic of Cuba, returned to Manhattan a week ago from Iowa. He will make his headquarters here during the next few weeks, while he is engaged in purchasing cattle in Kansas and Missouri for the experiment station at Santiago de Las Vegas. He visited chapel last Wednesday morning and spoke to the students about his new home, the people and the agricultural resources of the "Pearl of the Antilles."

It now being assured that the Auditorium will be ready for the first number of the society lecture course, a second sale of tickets will begin on Monday morning next. Five members from each of the five societies will have tickets for sale, besides having them on sale at Willard's drugstore and the Coöp. bookstore. Single admission for the first number will be seventy-five cents.

The College band is not so strong as it has been in some years, but is showing up in good form. The following is the membership and instrumentation at present: Piccolo, L. W. Lawson. Clarinets—H. B. Hubbard, F. W. Grabendike, O. H. Hanson, A. McCreary, J. R. Coxen, L. W. Fielding. Cornets—C. A. Souders, G. A. Spohr, M. Elsas, A. J. Cowles, E. M. Johnson, K. Perfect, F. C. Lewis, S. C. Douglas, H. W. Brinkman. Saxophone, H. E. Bixby. Horns—R. W. Terrell, A. H. Rose, D. M. Neer, E. W. Cudney. Trombones—D. Walters, J. G. Missilldine, A. J. Rhodes. Baritone, A. G. Kittell. Tuba—H. E. Porter, W. V. Biddison. Drums—F. W. Winters. Drum-Major, F. W. Wilson. Leader, Ass't R. H. Brown.

After months of waiting, we are finally in condition to announce that the new Auditorium is nearing its entire completion. The floors and stairways are oiled and cleaned, the fresco painters have removed their scaffolds, the Mechanical Department is fastening down the seats, and the Heat and Power Department is installing the radiators. There are yet many little things to be done. A foreign carpenter working on the job said to the "local" a few days ago: "When you dinks you vas done, you vas not nearly done mit der yob." But we are confident that the building will be ready for use some time during the coming week. The Campanari Concert Company, which gives the first number on the College lecture course, will occupy it on Saturday, November 19, and this being the first night, every one of the 2300 handsome new opera chairs should be occupied. It is one of the very finest and largest assembly halls in Kansas.

The December *Delineator*, with its message of good cheer and helpfulness, will be welcomed in every home. The fashion pages are unusually attractive, illustrating and describing the very latest modes in a way to make their construction during the busy festive season a pleasure instead of a task, and the literary and pictorial features are of rare excellence. A selection of Love Songs from the Wagner Operas, rendered into English by Richard de Gallienne and beautifully illustrated in colors by J. C. Leyendecker, occupies a prominent place, and a chapter in the Composers' Series, relating the Romance of Wagner and Cosima, is an interesting supplement to the lyrics. A very clever paper, entitled "The Court Circles of the Republic," describing some unique phases of Washington social life, is from an unnamed contributor, who is said to write from the inner circles of society. There are short stories from the pens of F. Hopkinson Smith, Robert Grant, Alice Brown, Mary Stewart Cutting, and Elmore Elliot Peake, and such interesting writers as Julia Magruder, L. Frank Baum, and

Grace MacGowan Cooke hold the attention of the children. Many Christmas suggestions are given in needlework and the cookery pages are redolent of the Christmas feast. In addition, there are the regular departments of the magazine, with many special articles on topics relating to woman's interests within and without the home.

ALUMNI AND FORMER STUDENTS.

L. R. Firebaugh, second year in 1900, visited the College last week on his way from Denver to St. Louis. Mr. Firebaugh is employed in a large job-printing establishment in Denver and has gone to St. Louis to learn to operate a linotype machine.

R. A. Oakley, '03, has been obliged to give up his work for the present with the Department of Agriculture, on account of inflammatory rheumatism, and is now taking treatment at Hot Springs, Ark. He hopes to take work at the University of Chicago this winter.

R. W. Clothier, '97, professor of agriculture in the Third District Normal School of Missouri, has issued an attractive nature study on weeds. It includes some interesting facts in respect to seed production and distribution, designed to attract the attention of the young.

Dalinda (Mason) Cotey, '81, feels a pardonable pride in the fact that the School of Domestic Science and Arts of the Agricultural College of Utah has been awarded the gold medal for its exhibition at St. Louis. In addition to Mrs. Cotey, that school now has two instructors and four assistants and it occupies fifteen large rooms. Mrs. Cotey recently presented a paper on "The Educational Value of Domestic Science Courses" before the State Federation of Women's Clubs which recently met in Logan and held a day's session at the Agricultural College. The domestic science pupils served a three-course dinner to the ladies of the federation, covers being laid for one hundred eighty.

We learn with great regret that Dr. Guy D. Hulett, '98, professor of the practice of osteopathy at the American School of Osteopathy, Kirksville, Mo., died Saturday, October 29, from typhoid fever, after an illness of three weeks. His loss is regarded as a severe one to his profession as he had been considered one of its leaders. He published a work on the "Principles of Osteopathy," a second edition of which has just been issued, which is considered an authority by his co-laborers and is adopted as a textbook by the American School of Osteopathy. He leaves his wife, who was Mary Alberta Dille, '99, and two children, a boy three years old and a girl three months old. Doctor Hulett was of an attractive personality and will be much missed by his associates, friends, and relatives. Among the last are C. M. T. Hulett, senior student in 1877, and Ione Hulett, '93, both of Cleveland, O., and M. F. Hulett, '93, of Columbus, O.

Historical Society

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♦ ♦ ♦

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CULTURE OF CAPE COD CRANBERRIES.

AT Centerville, Cape Cod, Mass., the most suitable and apparently the only ground used for cranberry culture is that of the cedar swamps, although I was told that the salt-marsh land could be used where it was possible to construct a dike that would keep out the ocean at high tide.

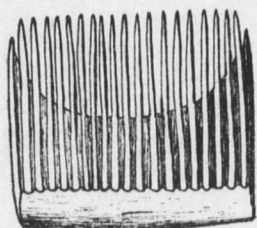
In preparing the swamp, or bog, as the growers term it, the first thing is to clear the land of the cedar trees and all underbrush. Ditches several feet deep and two feet or more in width are then dug around and sometimes across the bog that is to be planted. The turf is cut and a wheelbarrow used to cart it off the bog and the wheelbarrow is usually loaded back with sand. The wheelbarrow used is so constructed that the wheel is nearly under the center of gravity, so that a heavy load is easily managed. The turf is cut about eight inches thick and is removed for the purpose of ridding the bog of weeds, grass and roots that would later interfere with the growth of cranberries. The sand used must be entirely free from loam—a clean grit sand. Much land that might otherwise be used for cranberry bogs is as yet unused because good sand cannot be procured near at hand. Wheelbarrows are used because it is impossible to take horses upon the bog. A layer of sand at least eight inches deep is spread over the whole bog.

The cranberries are propagated from cuttings, which are usually taken from the parent vine and set directly in the sand. Cuttings are six to twelve inches long and set obliquely, so that but two or three inches is above the surface. A common distance for planting is twelve inches apart each way. A hard-wood dibble, long enough to allow a foot-rest and spade handle, is used. Some growers are not particular as to the length of cuttings, pieces of vine several feet long doubled three or four times being often used instead of uniform cuttings. There seems to be no difficulty about the plants making roots. The sand is packed by

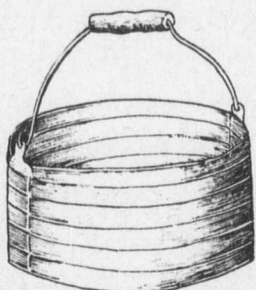
hand about the cuttings and firmed with the foot. Sometimes an old bog that has grown too rank is renewed by mowing off the tops



Scoop from side.



Scoop from beneath



Six quart measure.



Dibber.

and spreading a layer of fresh sand over the old plants. This kills the old plants, and the tops are then stuck in as cuttings.

Plants make a growth of from six to nine inches the first season and stand nearly upright. The second season they form runners from two to four feet long, which form roots all along their length and form new plants. A bog is usually picked when it is three years old, but the crop is not considered as very profitable until the plants are four years old. After that it lasts indefinitely, if the weeds are kept down and the plants prevented from getting too thick. If the layer of sand is too thin, the roots of the plants reach the peat of the bog beneath and the plants "run to vines," being very rank and bearing but little fruit, and the harvesting is much more difficult.

The bogs are generally flooded twice each year—during April, to prevent destruction of the crop by the cranberry-vine worm. The flooding holds the crop back until the danger of the injury is past. November first the bogs are again flooded to protect the plants during the winter freezes.

The season of picking is short and men and women of all ages, and even children, are employed as pickers. A small bog covered with pickers is a busy sight, and the rattle of the berries in many scoops is a continuous one. Pickers are paid by the measure, which holds six quarts. The scoops vary in size, some being so large as to hold almost a measure, others of older style hold but one or two quarts. The scoop figured here is one of late design. The teeth which form the base of the scoop are of wood, two feet long and about one-half inch in diameter. Above the teeth is a cloth flap inclined upward. The handle, sides and upper part are of wood. The experienced picker, if sufficiently muscular and

ambitious to keep this heavy scoop in motion all day long, frequently makes from three to four dollars per day. Before the pickers begin their work the bog is "lined off," by stretching small ropes across the patch about four feet apart, and each picker is given a section. With thirty or forty pickers working abreast the overseer has his hands full. It is the overseer's duty to see that each picker keeps to his own section, and that he does not leave the berries upon the ground. The vines are "combed" with an upward sweep of the scoop, the thin, wiry vines pulling through the teeth, leaving the berries in the scoop; the scoop is emptied into the measure and the measures into boxes, which are hauled to the "cranberry house," where the boxes are piled in tiers to await a less busy time. They are then cleaned by a machine made for the purpose, something on the principle of a thrashing-machine agitator. If there are many poor berries, they are run over tables and these removed by hand. The cranberry houses are made with dead-air spaces to protect from frost and kept dark. The berries are packed in barrels for shipment, and the fruit must be carefully handled. A great part of the New England crop is marketed about Thanksgiving time and during the winter holidays, but some are held until spring, when the price is usually higher.

The cranberry has all the requisites of a good market fruit—it keeps well, looks well, is good to eat, and consequently sells well. It has little competition in its season, and is usually considered a profitable crop. It is used in every corner of the United States, and in recent years the export trade has increased to very considerable proportions. Its use in nearly every home has increased very considerably in recent years, and is now quite commonly used where but a few years ago it was an aristocrat in western markets—used only as a satellite of His Highness, The American Turkey.

ALBERT DICKENS.

MILITARY INSTRUCTION IN THE LAND-GRANT COLLEGES.

THE idea of industrial education is comparatively a recent one. Prior to 1860 a few private institutions had shown the value of technical education, and a few agricultural schools had shown that practical agriculture could be successfully taught, but up to this time all the prominent colleges had adhered to the Old Latin, Greek, and Philosophy.

It was Senator Morrill who, in 1862, secured the passage of the act of Congress providing for the support of a college in each state for the education of the industrial classes in the sciences and arts and their application to the industries of life. The Civil War, which was in progress at the time, with the unprepared condition of the North, the lack of officers qualified to instruct in the most elementary principles of warfare, and the various and antiquated systems of drill used even where a knowledge of military drill did exist, led to the no less important provision that these colleges should offer instruction in military matters in order that the industries, which it was the purpose of the founder of industrial education to promote, should also be insured adequate protection in case of emergency in the future. Thus the Act to which the land-grant college owes its very existence, and upon which it depends largely for its support, makes it as much the duty of the authorities of these colleges to encourage military training as to promote industrial education.

Few states took advantage of this act until the Civil War and its bitter experiences were forgotten; and notwithstanding our humiliating experience with the untrained National Guard at the outbreak of the Spanish-American War, this provision of the Act has never received the recognition it deserves. In many of these institutions military instruction appears to be merely tolerated as necessary to secure the appropriation. In almost all of these colleges the original purpose of the provision is lost sight of, military drill being valued only for the excellent physical development which it offers the student.

True, in 1898 these colleges furnished from their graduates twenty-five per cent of the officers for the regular and volunteer forces in the war with Spain, and during the ten years previous to that time the annual inspections of the War Department show that about eighteen hundred cadet captains and lieutenants who had graduated from the military departments of land-grant colleges were, in the opinion of the Inspector General, "fairly well qualified to assume the functions of officers of volunteers," while nearly one hundred of these same cadets have received commissions in the regular service. These facts are due to the excellent material found among the graduates of these institutions, and to the inspiring and efficient efforts of the regular army officers detailed as instructors, rather than to the encouragement of military in-

struction by the college authorities. Nor were the merits of these young men recognized because they were proficient, but rather for lack of better instructed men available. Sixty-three per cent of the officers of the regular and volunteer forces during the Spanish-American War had received no instruction in military schools or colleges. Only twelve per cent were educated at West Point. The experience of all our wars has been that more men die from disease than from bullets. It is, then, of the highest importance that troops should be officered by men who have training in more than mere drill exercises. Nowhere can the work of West Point in training officers for future armies be better seconded than in the land-grant college.

With a view to establishing the uniformity necessary to make the military product of colleges of some definite value, the War Department, with the return of the army to theoretical instruction which was suspended during the war, has, in General Orders No. 94, A. G. O., 1902, and later in General Orders No. 65, War Department, 1904, made provision for the carrying out of the purpose of the military clause of the Act of 1862. General Orders No. 65, which now applies to military departments in colleges, besides providing for the detail of an officer of the army to instruct and the supply of arms, equipments, and amunition, outlines the required instruction to be given in land-grant colleges as follows:

"There shall be allowed a minimum of five hours per week, to be occupied as the professor of military science and tactics, in view of the hereinafter prescribed curriculum and such instructions as he may from time to time receive from the War Department, may deem best.*

(a) Practical:—

Infantry drill regulations, through school of the battalion in close and extended order.

Advance and rear guards, and outposts.

Marches.

The ceremonies of battalion review, inspection, guardmounting, and escort to the colors.

Infantry target practice.

Instruction in first aid to the injured.

"Weather permitting, there shall be not less than one parade each week of the school term, and one battalion inspection and review each month.

*By a recent interpretation of the War Department, ceremonies are required to be conducted outside of the allotted five hours per week.

"A guard shall be mounted five times (weather permitting) in each week of the school year, and the guard shall be practically instructed for one hour in the posting and relief of sentinels and their duties.

"In no case shall target practice, to the extent permitted by the allowance of ammunition, be omitted during the school year except on authority given in each case by the Secretary of War.

(b) Theoretical:—

The infantry drill regulations covered by the practical instruction.

The manual of guard duty.

Small arms firing regulations, Parts I, II, and VII.

The Articles of War, with special reference to articles 4, 8, 15, 20, 21, 22, 23, 24, 32, 38, 39, 40, 42, 44, 46, 47, 50, 55, 57, 61, and 65.

One lecture on camps and camp hygiene.

And the following records—

Enlistment and discharge papers, including descriptive lists.

Morning reports.

Field and monthly returns.

Muster rolls.

Rosters.

Ration returns.

Requisitions.

Property returns.

Ten lectures each year upon the following subjects, notes to be taken by the student and to be made the basis of subsequent recitations:—

Two lectures on the organization of the United States Army, including volunteers and militia.

One lecture on patrols and outposts.

One lecture on marches.

At least one lecture on camps and camp hygiene.

Three lectures on lines and bases of operations.

Two lectures on attack and defense of advance and rear guards and outposts, and convoys.

All the foregoing to be illustrated by historical examples."

This course, if thoroughly completed, affords the student little knowledge of military work that would not be possessed by a well-instructed corporal, and certainly aside from the practical instruction no more than should be understood by any generally well-informed citizen.

Very few of the land-grant colleges have fully recognized the requirements of the order. Even if fully complied with, the course fails to offer the cadet the incentive to study, which is found in other college branches, for the reason that no opportunity is offered for him to apply his knowledge after graduation. The result is, that many excellent students lose interest in the work for

lack of some reward in view, while the vast majority of those who do become proficient, finding no incentive after graduation to further pursue the study, soon lose the practical benefit of the instruction. Thus is defeated, in a large measure, the original purpose of the military clause of the Act of 1862, that of sending forth from the land-grant colleges a body of young men who could be depended upon at any time as qualified, in case of emergency, to take the field promptly in defense of the Nation.

It is to be regretted that the War Department offers to the graduating cadet nothing more than the bare honor of enrolment in the army register of the three most proficient, each year, and, for the one standing highest, the probability of an appointment for commission as second lieutenant in the regular army, providing his college stands among the first six in the United States, which is not likely to be the case so long as the land-grant college must compete with the strictly military colleges.

If, then, the purpose of military instruction in these colleges is to be fulfilled it devolves upon the institution to provide for the student who is especially adapted to this line of work a course which, when completed, will offer him some reward. A special course of from two to four terms' work, properly arranged and given under the supervision of the officer detailed at the college, if offered in addition to the work prescribed in General Orders 65, would partially solve this problem by enabling the cadet to qualify for the examination provided by General Orders No. 6, War Department, 1904, for eligibility to a commission in future volunteer forces of the United States. Officially recognized and enrolled as a member of a National reserve of men specially preferred for volunteer commissions, with the assurance that the Government has an eye constantly upon him and may at any moment quicken his military aspirations into life by giving him command in her armies, his interest in military affairs would naturally continue.

Even with the limited amount of time given to the military work in our own institution during the past year, the interest among cadets has been quite marked. Two of last year's class have secured appointments to West Point. More than a dozen of those enrolled during the year have attempted to secure similar appointments, and many more have expressed a desire to make military work a life profession. The graduates of this institution

have already established a noble record in the regular and volunteer armies during the recent war. Many of the cadets at present enrolled have expressed a desire for more advanced instruction. Practically all of these cadets are desirable material for officers. No doubt the same conditions exist in all land-grant institutions having the detail of an officer of the Army.

Why, then, should not these colleges fully provide for the instruction they were originally designed to promote, and which the students who patronize them demand? Why should they not procure the legislation necessary to secure the best equipments and spacious drill halls as they do in the case of supplies and buildings with which they are so liberally supplied for other departments? More liberal action by the War Department can scarcely be expected so long as the course of instruction already prescribed is so generally ignored.

With the authorities of these colleges rests the responsibility of carrying out the original purposes of the Act to which the institution owes its very existence.

PEARL M. SHAFFER,

Captain Twenty-fifth Infantry,
Professor of Military Science and Tactics.

TONE-COLOR

THIS term is common to the nomenclature of both music and oral expression; but for present purposes will be considered from the latter standpoint only.

Tone-color may be defined as the inherent quality of vowels and consonants that adapts them to the vocal presentation of thought and emotion. It should not be confused with onomatopœia. An onomatope is an imitative word: one whose vocal utterance is imitative of the sound of the thing which the word represents. The one is suggestive of the other, but not necessarily inclusive. Such words as buzz, hiss, crackle, boom, ping, cluck, chink, and howl are expressive of the sounds represented, and are strictly formulative in character, *i. e.*, appeal to the perceptive faculties. On the other hand, such vowels and consonants as *a*, *o*, *e*, *i*, *h*, *s*, and *g* have individual qualities which are emotional in character, and of general, rather than specific, applicability. Thus, the long sound of *oo*, regardless of its combination with other letters, is generally soothing in its effects, as in the word smooth.

It does not follow, of course, that the meaning of all words con-

taining this diphthong is modified to any extent; or that the sound has anything in common with the thing named. It would be difficult to defend such an hypothesis in the words stoop, sloop, scoop, hoof, roof, etc. Such a union of sound and meaning is possible only in onomatopes. It can be said, however, that there is nothing angular, sharp, grating, or harsh about these words when spoken, and that this effect is due to the dominant sound of *oo*. In other words, the sound of this character envelopes the word of which it is a part, in a sort of atmosphere that suggests ease, quiet, and gentleness. It "colors" the word and, in proper combination with other words of similar character, forms a background of emotional significance for whole sentences, stanzas, or paragraphs.

It is this quality which enters so largely into the charm of poetry. Holmes speaks of the velvety *v*'s, and Burns, addressing the vowel *o* says, "O, thou wailing minstrel of despairing woe." This does not mean that every *o* wails; but it does mean that *o* is the best vowel through which sorrow, grief, sadness, etc., can be expressed.

The majesty of Milton's verse, its depth of feeling and descriptive power, is due, in no small degree, to his appreciation of tone-color as a reënforcement of the thought expressed in words. He often overrides recognized rules of versification in order to get the deeper and more significant effects of tone-color. In one of his sonnets descriptive of the persecution and sufferings of the early saints, he ends each of fourteen consecutive lines with one of the following words: bones, cold, old, stones, groans, fold, rolled, moans, they, sow, sway, grow, way, woe. Eleven of these words contain a long *o*. He might be criticised for this on the ground of monotony; and in most poetry it would be considered an artistic blemish; but who can escape the effect of pity, pathos and solemnity which these words convey even in their isolation from the sentences of which they form a part? It was clearly his purpose to produce this effect, and hence his choice of these words with their peculiar tone-coloring.

The appreciation of tone-color, to some degree at least, is quite universal. Either consciously or unconsciously every person, regardless of age or education, appreciates it. The infant in its cradle, understanding the meaning of not a single word, has nevertheless a thorough appreciation of the long *a*'s and *i*'s and

o's that give a soothing effect to its mother's lullaby. A baby finds sympathy and comfort in the long sound of *o* repeated again and again; but no baby ever went to sleep to the tune of short *i*.

Both the savage and the civilized man interpret this quality, whether it be found in stately verse or pompous war song. Even brutes understand it: "so, bossie, so," "scat," "whoa," "get up," etc.

Why is this? Why should *oo* be soothing, *o* noble, *a* intense, and broad *a* hearty? Briefly speaking, it is due to muscular texture and the state of mind or emotion. Thus the *oo* is soothing because the vocal organs and the muscles controlling them are gently relaxed; the tongue lies softly on the floor of the mouth, and the normal attitude of the whole body is one of repose. Behind the muscular condition of the body, as a cause, is the emotional state of the mind. Every muscular condition is the result of mental state or purpose. In the case of long *oo*, there is a comfortable, conciliatory, agreeable feeling which induces the muscular texture above described, and the sound produced by the vocal organs when in this condition suggests or begets a similar mental state or purpose in the person addressed.

Again, if the mouth is opened wider and the opening of the lips made round, *o* is produced, whose generic significance may be designated as noble, large, expanded. Changing the position of the lips by drawing back the corners of the mouth, making them more tense, and flattening the tongue so that its tip touches more firmly the lower front teeth, the vowel *a* is produced, giving an enlarged and intense effect, both of which enter into the mental concept of greatness. Relaxing the muscles of the lips, tongue and other organs remotely concerned in the production of this sound, and opening the mouth widely without any stiffening or muscular constraint, the sound *ah* is produced, symbolizing openness, heartiness, but without the effect of intenseness.

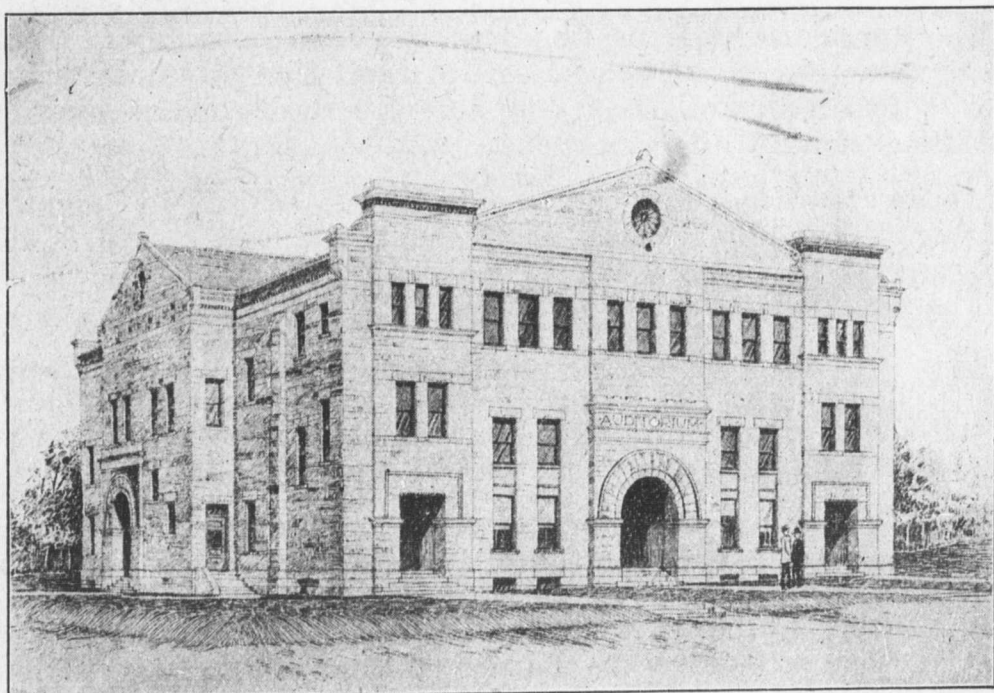
These analogies and a few others have been summed up by Mr. Charles K. Swartz in the following table:

Oral organs.		Significance.
Gently relaxed.....	<i>oo</i>	Soothing
Tense.....	<i>e</i>	Intense
Expanded.....	<i>o</i>	Noble, enlarged
Expanded tense.....	<i>a</i>	Great, large, intense
Open.....	<i>ah</i>	Hearty, openness
Open tense.....	<i>i</i>	High, wideness, intense

A further study of vowels and consonants would reveal other relations between mental concept and tone-color. Enough has been said, however, for purposes of illustration.

A recognition of the intimate relation existing between mental concept and muscular texture as a cause, and proper oral expression as an effect, is essential to good reading. In other words, unless the printed page engender in the reader the proper feeling, and unless this feeling induce the correct state of muscular tenseness or relaxation, the utterance will not fully express either the thought or the emotion contained in the piece. What background is to a painting tone-color is to literature. It enriches the thought, intensifies the feeling, and gives an added significance to the literal meaning of words. To appreciate it is to enlarge one's powers of impression and expression. It is this quality that makes some words "heavy and rugged like great nuggets of gold," or "glittering and gay like imperial gems;" it makes others "crush like the battle-ax of Richard," or "cut like the scimeter of Saladin;" "sting like a serpent's fangs, or soothe like a mother's kiss."

J. E. KAMMEYER.



The new Auditorium, which will be opened to the public to-night for the first number of the lecture course, the Campanari concert.

THE INDUSTRIALIST.

*Published weekly during the College year by the
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Manhattan, Kansas.

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LOCAL NOTES.

The Dairy Department has ordered two new separators.

The annual meeting of the Amercian Live Stock Association will be held in Chicago, November 26.

The Manhattan Library Association will have a book shower, at their new library building, November 21.

Roy A. Seaton, '04, assistant in mathematics, was called home last week by the serious illness of his father.

The new water-supply of the College is all right. The water is clear and not quite as hard as that of the city.

The stock-judging class went to Mr. McCormick's farm, southwest of Zeandale, one day last week, to judge sheep.

Prof. C. L. Barnes, of the Veterinary Department, is kept busy with State work. Last week he visited Butler, Chase, Graham, Russel and Osborne counties to investigate contagious diseases.

The Horticultural Department is leveling the ground around the new Auditorium and covering the new walks with coal cinders, and Professor Dickens is trying to solve the problem where to put the necessary hitching-racks.

Andrew J. Mead, who came to Kansas in 1855 from Cincinnati by way of the Ohio, Mississippi, Missouri and Kaw rivers, is dead at Yonkers, N. Y., aged 89. He helped found Manhattan in 1856 and became its first mayor in 1857.

The freshmen had a class party in the Woman's Gymnasium last Monday night. It was well attended and several members of the Faculty, including President Nichols, were present. The freshmen always have a good time at their "frolics."

The United States Department of Agriculture has again drawn on Kansas for one of the capable men with which this State abounds. This time Prof. D. E. Lantz, formerly professor of mathematics at the Agricultural College, later in charge of the special work of destroying the prairie-dogs which have infested the short-grass country, is called to be editor of publications of the Biological Survey. Professor Lantz is an enthusiast on biological subjects. His broad knowledge of the matters that will come under his eye and his habits of accuracy and diligence will be exceedingly useful in the position to which he has been called. The Biological Survey is to be congratulated.—*Kansas Farmer.*

John F. Ross, '02, is now teacher of agriculture in the United States Indian Training School, at Genoa, Neb. He writes for Experiment Station bulletins and for information concerning obtaining samples of manufactured corn products. He likes his work very much.

The formal dedication of the new Auditorium will take place on December 14. The program of the exercises is not completed, as yet, but a large number of invitations to representative educators and prominent legislators will soon be issued. The principal address will be delivered by President Storms, of the Iowa Agricultural College. No pains will be spared on the part of the College to make the dedication worthy of the finest aula in the State.

Chas. S. Davis, formerly superintendent of the College printing-office, in 1897-'99, preceeding Supt. J. D. Rickman, was in Manhattan meeting old friends to-day. Upon leaving the College he went to the Chilocco Indian School, in Oklahoma, and after superintending the printing-office there a few years he went to Washington, D. C., where he is now employed in the government printing-office. He retains his residence in Chilocco. Mr. Davis has had copyrighted a distribution chart of leads and slugs which he is endeavoring to have adopted at the government printing-office.—*Daily Republic*.

Good for the College and Manhattan! The macadamized road from the city to the College gate, for which generations of students have been longing and hoping, is to become a reality. In response to petitions the city council has passed a resolution calling for the macadamizing of the following streets: Second street from Poyntz to Leavenworth, thence west to ninth, thence north to Vattier, and thence west to Manhattan Avenue. The petition for curbing Leavenworth street was also granted. We do not know how soon this work is to start, nor when it is to be completed, but we feel that Manhattan realizes what such an improvement must mean for the growth of the Agricultural College and its home city, and we hope that there will be no unnecessary delays.

From Brooklyn comes the news that Mrs. Mary E. Cripps, who occupied the position of superintendent of sewing and cooking at this College from '75 to '82, is dead. Former pupils and teachers will remember the lady as a kindly but very positive character, a hard worker, and a practical modern woman. During the sixties Mrs. Cripps carried on a wholesale and retail millinery business in Brooklyn. In later years, going west, she was identified with the early temperance movement in Kansas. After her work at this College she, with her son Charles, who is a graduate of this institution, engaged for a while in farming. Later she moved back to Brooklyn and lived with her children. Twenty-five or thirty years ago teachers of woman's work were very scarce, and means and methods were undeveloped. Mrs. Cripps was a pioneer and deserved credit for her energetic efforts at systematizing the work of instruction in her special field.

KANSAS STATE AGRICULTURAL COLLEGE

SIX FOUR-YEAR COURSES OF STUDY

Each leading to the degree of Bachelor of Science, are as follows:

1. Agriculture.
2. Domestic Science.
3. Mechanical Engineering.
4. Electrical Engineering.
5. Architecture.
6. General Science.

This Institution is supported by the general government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.

All Common-school Branches are taught each term, and nearly all the first- and second-year subjects, so that it is possible for one to get nearly all subjects of the first two years by attendance during winter terms only.

THREE SHORT COURSES

Open to students of mature age who cannot, for lack of time or money, take one of the four-year courses.

1. **Domestic Science**, two fall terms of twelve weeks each.
2. **Dairying**, one winter term of twelve weeks.
3. **Agriculture**, two winter terms of twelve weeks each.

College Classes are open to both sexes. Tuition is free. An incidental fee of \$3 per term is charged all students from Kansas. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothing and traveling, are between \$100 and \$200. All College laboratories, shops and classrooms are well supplied with needful apparatus and appliances. A preparatory department is maintained for persons over eighteen who cannot pass the common-school branches.

WINTER TERM BEGINS JANUARY 3, 1905

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Pres. E. R. Nichols, - - Manhattan, Kan.

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ISSUED WEEKLY BY

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Local Editor, - - PROF. J. D. WALTERS

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THE INDUSTRIALIST.

VOL. 31. MANHATTAN, KAN., NOVEMBER 26, 1904. No. 10

CONCERNING THE COLLEGE.

The following extracts are taken from the fourteenth biennial report of the College:

To the Board of Regents:

GENTLEMEN.—Herewith is submitted my report of the executive department for the biennial period ending June 30, 1904.

CHANGES IN EMPLOYEES.

Of the large number of changes in the faculty and assistants you are familiar. I trust that you will urge upon the legislature the necessity of a liberal appropriation, that you may pay such salaries as the importance of the work demands, and stop our teachers from being drawn away by the offer of better salaries elsewhere.

THE COURSES OF STUDY.

The four-year courses of study are alike the first year except such differences as sex requires. Young men have agriculture and three terms of shop practice; young women take cooking and three terms of sewing. This arrangement enables the student to select his course much more intelligently, and therefore much more satisfactorily. The following table shows courses of study selected by the students for the past six years. In preparing the table, it has been assumed that the first-year students will elect in the same ratio as in the upper classes:

YEAR.	Total.	Men.						Women.			
		Agriculture.		Engineering.		General science.		General science.		Domestic science.	
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
1898-'99	870	127	22 1	160	27.8	287	50.1	193	65.4	103	34.6
1899-1900	1094	257	34.1	201	26.7	296	39.1	170	50.0	170	50.0
1900-'01	1321	378	39.6	293	30.7	284	29.7	109	29.8	257	70.2
1901 '02	1396	407	40.0	367	36.1	243	23.9	83	21.9	296	78.1
1902-'03	1574	457	41.2	420	37.9	232	20.9	82	17.6	383	82.4
1903-'04	1605	492	43.9	398	35.5	232	20.6	40	8.3	443	91.7

ATTENDANCE.

The following tables show the attendance by classes and by counties for the last two years, with a comparative statement of the attendance for the last twenty-six years:

CLASSES.	1902-'03.				1903-'04.			
	Men.	Women.	Totals.	Average age.	Men.	Women.	Totals.	Average age.
Graduate.....	13	11	24	26.73	10	10	20	25.05
Senior.....	57	29	86	22.92	75	39	114	23.13
Junior.....	97	44	141	22.11	110	51	161	21.90
Sophomore.....	152	77	229	20.77	148	58	206	20.59
Freshman.....	326	145	471	19.17	259	144	403	19.48
Preparatory.....	255	87	342	20.89	337	106	443	19.88
Special.....	16	20	36	24.67	19	14	33	24.61
Dairy.....	37	1	38	22.07	16	.....	16	22.07
Farmers' short course..	123	.....	123	22.76	122	.....	122	22.83
Domestic science short course..	.....	63	63	22.76	.....	51	51	22.72
Apprentices.....	76	2	78	22.73	71	1	72	22.36
Counted twice.....	43	14	57	.....	28	8	36	.....
Tota's.....	1109	465	1574	22.50	1139	466	1605	22.19

The attendance by counties was as follows:

COUNTIES.	1902-'03.	1903-'04.	COUNTIES.	1902-'03.	1903-'04.
Allen.....	13	7	Linn.....	4	5
Anderson.....	8	8	Logan.....	9	9
Atchison.....	4	8	Lyon.....	23	22
Barber.....	7	7	McPherson.....	43	33
Barton.....	11	15	Marion.....	13	11
Bourbon.....	14	10	Marshall.....	51	50
Brown.....	24	33	Meade.....	1	4
Butler.....	15	18	Miami.....	7	5
Chase.....	7	6	Mitchell.....	21	26
Chautauqua.....	.....	2	Montgomery.....	4	10
Cherokee.....	5	7	Morris.....	24	29
Clay.....	22	27	Nemaha.....	13	14
Cloud.....	17	21	Neosho.....	6	10
Coffey.....	13	19	Ness.....	1	1
Comanche.....	2	6	Norton.....	8	8
Cowley.....	21	32	Osage.....	23	20
Crawford.....	8	8	Osborne.....	5	5
Decatur.....	7	8	Ottawa.....	8	13
Dickinson.....	33	21	Pawnee.....	6	7
Doniphan.....	8	7	Phillips.....	16	15
Douglas.....	15	16	Pottawatomie.....	42	40
Edwards.....	9	5	Pratt.....	4	7
Elk.....	5	2	Rawlins.....	1	..
Ellis.....	1	4	Reno.....	11	17
Ellsworth.....	6	4	Republic.....	20	17
Finney.....	.....	3	Rice.....	23	15
Ford.....	4	8	Riley.....	387	401
Franklin.....	26	27	Rooks.....	9	5
Geary.....	14	17	Russell.....	8	12
Gove.....	2	3	Saline.....	10	12
Graham.....	6	4	Scott.....	3	1
Grant.....	1	2	Sedgwick.....	16	27
Gray.....	1	1	Seward.....	1	2
Greenwood.....	5	11	Shawnee.....	50	57
Harper.....	4	10	Sheridan.....	..	5
Harvey.....	13	16	Sherman.....	..	2
Hodgeman.....	..	3	Smith.....	30	27
Jackson.....	15	25	Stafford.....	7	4
Jefferson.....	36	22	Stevens.....	..	2
Jewell.....	26	27	Sumner.....	20	26
Johnson.....	9	15	Thomas.....	3	3
Kearny.....	3	..	Trego.....	1	3
Kingman.....	7	2	Wabaunsee.....	23	16
Kiowa.....	2	3	Wallace.....	2	1
Labette.....	5	7	Washington.....	20	25
Lane.....	1	..	Wilson.....	6	7
Leavenworth.....	7	8	Woodson.....	14	1
Lincoln.....	16	23	Wyandotte.....	11	9

The attendance from states other than Kansas was as follows:

STATES.	1902-'03.	1903-'04.	STATES.	1902-'03.	1903-'04.
Arkansas.....	1	..	Montana.....	1	1
California.....	..	2	Nebraska.....	9	2
Colorado.....	3	2	New York.....	1	..
Illinois.....	10	..	North Dakota...	1	..
Indiana.....	1	..	Ohio.....	1	1
Indian Territory.....	6	2	Oklahoma.....	12	1
Iowa.....	5	..	Pennsylvania.....	3	..
Kentucky.....	1	..	Philippine Islands.....	1	..
Louisiana.....	1	2	Tennessee.....	1	..
Michigan.....	..	1	Texas.....	6	4
Minnesota.....	5	..	Washington.....	1	..
Missouri.....	18	8			

RECAPITULATION.

1902-'03.	From ninety counties of Kansas.....	1486
	From twenty-one other states.....	88
	Total.....	1574
1903-'04.	From ninety-three counties of Kansas.....	1579
	From eleven other states.....	26
	Total.....	1605

Pecuniary Needs.—The following table, made up from the government reports for the seven years, 1896–1903, shows better than any other way, probably, the needs of this College and the difficulties under which the Board labors:

STATE AGRICULTURAL COLLEGES.	Average for seven years—1896–1903.				1903.	
	Enrolment.	Faculty.	Income. ¹	Cost per student.	Volumes in library.	Property. ²
Kansas.....	1103	50	\$108,786	\$ 99	27,710	\$1,037,033
Iowa.....	1042	65	159,292	153	20,000	1,563,891
Indiana.....	955	70	158,699	166	15,400	1,099,250
Michigan.....	599	48	166,427	278	24,003	1,735,224
South Dakota.....	454	26	65,022	143	17,350	1,051,685
North Dakota.....	424	26	61,481	145	9,350	1,290,929
Colorado.....	388	29	73,626	190	13,253	559,436
Averages.....	709	45	\$113,333	\$168	19,009	\$1,199,635

1. Average annual income from all sources and for all purposes, including buildings.

2. Includes endowment.

The College should have had an average annual income of \$184,000 for the seven years ending June 30, 1903, to have had an annual expenditure per student of \$168, the average given above.

The College needs for the next biennial period the following:

	1906	1907
1. Horticultural building and greenhouses.....	\$60,000	.....
2. Addition to boiler-room.....	3,000	.....
3. Three 125-horse-power boilers and stacks.....	10,000	.....
4. Addition to boiler-room.....	.....	\$ 3,000
5. Horse barn.....	6,000	.....
6. Granary.....	4,000	.....
7. Library stacks.....	.....	4,000
8. Engineering laboratory and equipment.....	19,000	9,000
9. Addition to blacksmith shop.....	8,000	.....
10. Addition to wood shop.....	.....	6,000

11. Addition to Domestic Science hall.....	10,000	
12. Gymnasium for young men.....	65,000	
13. Current expenses	60,000	70,000
14. Freight and drayage on coal.....	5,500	6,000
15. Farmers' institutes.....	2,000	2,000
16. Books and periodicals	2,000	2,000
17. Salary state veterinarian.....	2,000	2,000
18. Salary loan commissioner.....	300	300
19. Rent president's house	480	480
20. Repairs—buildings and grounds.....	5,000	5,000
21. Agricultural equipment.....	3,000	3,000
22. Dairy and animal husbandry equipment	5,000	5,000
23. Mechanical equipment.....	3,000	3,000
24. Physics equipment.....	2,000	2,000
25. Chemistry equipment.	2,000	2,000
26. Domestic science equipment.....	1,500	1,500
27. Horticultural equipment.....	2,000	2,000
Totals	\$205,780	\$203,780

The Fort Hays Branch Experiment Station needs:

	1906	1907
1. Current expenses.....	\$6,000	\$6,000
2. Machinery.....	1,000	1,000
3. Fencing.....	500	500
4. Sheds.....	500	500
5. Improved live stock.....	2,000	2,000
6. Teams and equipment.....	2,000	2,000
7. Horse shed.....	500	500
8. Hay sheds.....	300	300
9. Office and laboratory.....	1,000	.....
10. Granary and elevator.....	1,500	.....
11. Cottage.....	1,000	.....
12. Superintendent's residence.....	.....	2,000
13. Horticulture.....	1,000	1,000
14. General building repairs.....	500	500
15. Extention of water system.....	200	200
16. Irrigation dam.....	.....	800
Totals.....	\$18,000	\$17,300

EDITORIAL COMMENT.

After the meetings of the State Editorial Association held in Manhattan a year ago last February many of the editors wrote very complimentary articles about this College. Most of them appreciated the fact that the institution was not provided for sufficiently to do what is expected of it, and spoke of the great possibilities should the legislature make appropriations consistent with the needs of the College. We reproduce below some of the comments made at that time, and regret that all cannot be reprinted. However, enough is said to give an idea of the feelings of the editors:

The Kansas Editorial Association held its annnal meeting this week at Manhattan, and a representative of the *New Era* was present to enjoy this annual love-feast of the editorial fraternity.

It was held at Manhattan so that a visit to the State Agricultural College could be made and we could become more familiar with this grand school that so eminently qualifies our young men and women for the practical duties and responsibilities of life. It keeps the student in touch with the chief sources of wealth, the farm, and with manual labor in all its branches, and dignifies labor in a way that no other college in the State does. The enrolment of students is over 1400—the largest college of its kind in the United States. Every branch of the industrial arts is taught there, and the student is required to familiarize himself with some branch of the arts, which he may select. There is an agrico-intellectual atmosphere about the College that thoroughly imbues the student with the dignity of agricultural and mechanical pursuits. There are the shops for iron and wood works, the printing-office, the creamery, the chemistry building, the conservatory for propagating flowers, the growing of cereals, and grasses, and trees, the barns with herds of cattle, hogs and horses to experiment with; all combine to induce the student to engage in such a calling. And the girls are given equal inducements to become cultured and dignified helpers to the farmer and mechanic, or as a wife or wage-earner. They are taught cooking, sewing, and every branch of housekeeping by modern methods along with the other studies usually taught in colleges. It is a school that is a blending of the intellectual, social and mechanical in such a harmonious way that is truly charming.—*The New Era, Spring Hill.*

The editors were invited by President Nichols to inspect the Agricultural College and they found the aim and scope of the school admirable; but the school needs more than it has been given. It is the greatest school of its kind on the globe. The departments are up-to-date. The iron and wood shops, the gymnasium, library, dairy, the live stock, the militia—all good; but more buildings are needed. This great State can well afford to equip the Agricultural College to the point that it may have the facilities to do what it aims to do. A new chapel is needed. Also new and better printing machinery. Printing is taught at the school. But the material and presses are of the crudest kind. If printing is to be taught it should be taught right. New presses should be installed, also linotypes and power cutters and the very best labor-saving inventions. It would be possible to build up at the College a

Printing Department competent to do all the State work at one-third the present cost. But even if this idea is too far advanced, the art of printing can only be hinted at by present methods. A modern printing-office should be installed; also a chair of journalism. So long as newspapers are to be made those interested should be shown how to make them. If printing is to be done, let the students learn the rudiments by the best means obtainable. It will cost money to get for the Agricultural College all that it needs, but no visitor will fail to be favorably impressed with the idea that when the State invests its money for the betterment of the College the people will get the benefit. In summer time the campus must be beautiful. I was disappointed in the State barns and sheds. Many a farmer hereabouts has just as good and better. In Brown county most of the farmers have better housings for their stock than are to be seen at the experimental farm of the State. Considering that Kansas is greatest in agricultural resources, the College where farming is taught, although it is the finest school of its kind, can be improved as far as the eye can see. And yet the school is finer than any other. Some of the buildings are very handsome. But, like the State-house at Topeka, the College certainly needs another appropriation—several of them.—*Brown County World.*

The biggest thing in Manhattan is the Agricultural College, where the editors were entertained Tuesday morning. A volume might be written about the institution. There are three or four things, however, that are especially noticeable to the casual visitor. The thing that impresses itself most forcibly is the personnel of the student body. There is a too general belief in Kansas that the State Agricultural College is a "jay" institution. That opinion is not only erroneous, but it is doubtless keeping students out of the school. The student body at Manhattan is as well dressed, as intelligent and refined, and it pays as much attention to the little niceties of life that go with culture and a rising civilization as the students one sees about the campus and in the halls of the University of Chicago. The school needs a new printing-office badly. The superintendent of printing is trying to teach the rudiments of the art with an equipment that is little superior to that employed in printing the *Topeka State Ledger*. The presses look as though they were

brought to Kansas coincident with the promulgation of the Le-compton constitntion. The type is old and worn, and much of it is of the vintage of the late seventies. The greenhouse plants and shrubs—a most remarkable collection, by the way—are housed in a building that couldn't hold a job as a cow barn on a well regulated farm in Kansas. The next legislature should look after the printing-office and greenhouse.—*Topeka Daily Capital*.

The real treat—and we may say with equal truth—and surprise was our visit Tuesday forenoon to the grounds and buildings of the Kansas State Agricultural College. President Nichols and his able assistants devoted their entire attention to our welfare while their guests. We were cordially received by the students, almost thirteen hundred in number; bright, intelligent, ambitious boys and girls of which any state might well be proud. The College cadets were out in full number and fired a salute in our behalf. The band and orchestra gave hearty welcome and the voices of the entire number fairly rent the air with their college yells in signifying the warmth of the greeting they had no time to do individually. And as to the schools. Fine, elegant buildings, others in course of erection, well-kept class rooms, shops, stables, pens. and feed yard. It seems that everything is taught here. From the highest work in books, from the finest work in sewing, from the finest architecture, dairy work, machine work, to the best way to feed a horse, a cow or a shoat; everything is first class and thorough in its detail. We were surprised at the numerous things our boys and girls are taught. It is a generous institution and well may Manhattan be proud to have the College within its borders—well may the State be proud; it is yours and for your children. It had a difficult time in earlier years to keep up its course, but people are becoming better educated to its qualities, its advantages, and there is now a better, more generous feeling toward it, and it is better attended this year than ever before. Long may it prosper and may the coming generations be more closely allied to it that it may go down the ages a lasting glory and edification of the citizens of Kansas.—*The News, Belle Plaine*.

One feature of the entertainment was a visit to the State Agricultural College. This institution has grown with giant strides until now it has nearly fifteen hundred students. Brown county is well represented here by twenty or more students. The efforts

of the institution are directed towards furnishing a practical education. In the Dairy Department the students are taught how to feed the cow; what food produces milk and what fat; how to test the milk to determine its richness, and so on through the various stages until it becomes choice creamery butter. In the shops a general knowledge of tools and their uses and abuses is given. In the Domestic Science Department the girls are taught relative values of foods and how to prepare them skillfully and economically. They are also taught how to sew, mend, and patch. These are but a few of the many courses given, but they will serve to illustrate the practical character of the instruction given. The time has gone by when the Kansan needs to send his sons and daughters away from home to be educated. Our State Agricultural College is the best of its kind, and every loyal Kansan should be proud of it.—*Kansas Democrat, Hiawatha.*

Tuesday afternoon was devoted to a visit to the State Agricultural College, and the event was an eye-opener to most of the editors. It certainly was to us. It was our first visit to this really great school, and though we have been more or less familiar with its history and management for nearly a quarter of a century, the beauty of the site and environments, the magnificence of the buildings and equipments, the diversity and extent of the industrial features, the number and character of the students, the scope of the curriculum—in a word, the bigness of the institution was a revelation to us, and we think it was to most of the visitors. President Nichols and other members of the Faculty were very kind and courteous. The *Record* will be a better friend than ever, hereafter, of the State Agricultural College, and we will watch with increasing interest its growth and development, lending a helping hand, when we can, in the good work of its upbuilding.—*Marion Record.*

Every editor who was at Manhattan last week will be at Topeka next winter during the session of the legislature, lobbying for appropriations for the College. An auditorium is badly needed; also more modern presses and other printing and binding appliances for the Printing Department. That Department is badly crippled for want of material and modern machinery.—*Le Roy Reporter.*

This educational institution is doing a grand and glorious work, but the Faculty is handicapped by the niggardly appropriations for its expenses. We venture the opinion that if our state legislature only knew the great amount of good that is being accomplished at this institution, they would be far more liberal in their appropriations for its needs.—*Vermillion Times*.

The College is in urgent need of a new chapel building, and also a modern printing-office. People who think of sending their young folks away to school should visit the State Agricultural College and see for themselves: There is a constant demand for men and women who have the sort of training that this institution gives.—*Jewell City Republican*.

The College should have a new and up-to-date printing-office and machinery. Its old presses were models in their day but have served their time, and that which typifies and blesses the present should be immediately placed.—*Daily Walnut Valley Times*.

A PRESIDENTIAL ELECTION.

THE men who framed the Constitution were exceptionally well adapted to that purpose. There were many conflicting interests to be considered and to be reconciled before a government uniting all the states into one could be formed. The result was that the Constitution is a compromise of many differing interests and warring claims—happily adjusted not only for the time when adopted, but now. The first ten amendments adopted so soon after the government went into operation may be considered in effect a part of the original instrument. The twelfth amendment is only a slight change, simply designating more definitely as to the President and Vice-President.

But there is always some one who never assisted in making a constitution, and yet that some one imagines he could improve on that which has worked remarkably well for more than a century. And so he would change the present method of electing a President, and elect directly by a vote of the people. Thus the states as states would be ignored in a presidential election, while it would be otherwise in the election of Congressmen.

Herewith is appended some analysis of the vote in the election of 1900. Column C is based upon the United States census of 1900, this census giving the number of males of voting age.

1900. STATES.*	A. Elec- toral College.	B. Total Popu- lation.	C. Voting Popu- lation.	D. Votes Cast.	E. Per cent of Votes Cast.
Alabama.....	1.1	1.244	1.000	.451	.386
Arkansas.....	.8	.892	.758	.361	.408
California.....	.9	1.010	1.325	.855	.600
Colorado.....	.4	.367	.449	.654	1.192
Connecticut.....	.6	.618	.678	.509	.642
Delaware.....	.3	.126	.129	.119	.839
Florida.....	.4	.359	.337	.110	.272
Georgia.....	1.3	1.507	1.210	1.347	.245
Idaho.....	.3	.111	.130	.164	1.074
Illinois.....	2.4	3.279	3.389	3.200	.807
Indiana.....	1.5	1.711	1.741	1.849	.922
Iowa.....	1.3	1.518	1.535	1.498	.834
Kansas.....	1.0	1.000	1.000	1.000	.855
Kentucky.....	1.3	1.460	1.315	1.325	.867
Louisiana.....	.8	.934	.788	.192	.187
Maine.....	.6	.472	.526	.299	.467
Maryland.....	.8	.808	.278	.748	.822
Massachusetts.....	1.5	1.908	2.038	1.171	.491
Michigan.....	1.4	1.646	1.739	1.539	.756
Minnesota.....	.9	1.191	1.225	.883	.620
Mississippi.....	.9	1.055	.844	.167	.160
Missouri.....	1.7	2.113	2.090	1.650	.798
Montana.....	.3	.166	.246	.180	.623
Nebraska.....	.4	.727	.730	.682	.470
Nevada.....	.3	.029	.043	.023	.577
New Hampshire.....	.4	.280	.317	.261	.705
New Jersey.....	1.0	1.281	1.343	1.134	.749
New York.....	3.6	4.943	5.280	4.376	.708
North Carolina.....	1.1	1.287	1.009	.827	.701
North Dakota.....	.3	.217	.230	.163	.601
Ohio.....	2.3	2.827	2.930	2.940	.858
Oregon.....	.4	.281	.349	.238	.583
Pennsylvania.....	3.2	4.286	4.393	3.317	.646
Rhode Island.....	.4	.291	.307	.160	.445
South Carolina.....	.9	.911	.687	.143	.179
South Dakota.....	.4	.273	.272	.272	.853
Tennessee.....	1.2	1.374	1.178	.768	.557
Texas.....	1.5	2.073	1.781	1.165	.559
Utah.....	.3	.183	.162	.260	1.372
Vermont.....	.4	.234	.262	.159	.518
Virginia.....	1.2	1.267	1.080	.747	.590
Washington.....	.4	.352	.472	.304	.549
West Virginia.....	.6	.652	.599	.624	.890
Wisconsin.....	1.2	1.407	1.379	1.252	.759
Wyoming.....	.3	.083	.092	.070	.655

*Kansas is taken as a unit.

Column B shows twenty-one states having a greater population than Kansas; column C the same number, with a greater voting population. (Alabama has 76 more than Kansas.) Column D, that fourteen states cast more votes.

Kansas had a population of 1,470,495, cast 353,766 votes, and counted ten in the electoral college. Florida, Georgia, Louisiana, Mississippi, and South Carolina, with 5,547,589 greater population, cast 22,102 votes less than Kansas, and counted forty-two. Idaho, Montana, Nevada, North Dakota, Utah, and Wyoming had 334,633 less population, cast 47,368 fewer votes, and counted eighteen. New Hampshire, Rhode Island, Vermont, and Maine had 407,756 greater population, cast 132,944 fewer votes, and counted eighteen. Idaho, Nevada, and Wyoming had 1,174,847 less population, cast 244,226 fewer votes, and counted nine.

New York had 4,164,077 greater population, cast 938,649 more votes than Florida, Delaware, Idaho, Montana, New Hampshire, North Dakota, Oregon, Rhode Island, Utah, and Wyoming. New York counted thirty-six, the other states thirty-seven.

Pennsylvania had a population 2,714,879 greater, cast 517,085 more votes than Colorado, Florida, New Hampshire, Oregon, Rhode Island, South Dakota, Vermont, and Washington. Pennsylvania counted thirty-two, the other states counted thirty-two.

On the other hand, if the votes be cast directly for the President, Alabama, Arkansas, Florida, Georgia, Mississippi, and South Carolina, containing 11.5 per cent of all the population, would count on the total vote 4 per cent. In these states many of voting age are not, by law, permitted to vote. An amendment to the Constitution determines how the congressional, and hence the electoral vote, can be reduced, but no one enforces it. If the vote is to be cast directly for President, what is there to prevent these states, by law, from having the now disfranchised votes cast by the more intelligent and counted as the more intelligent desire?

The Fourteenth Amendment declares who are citizens of the United States, and of the state wherein the party resides; that no state shall make or enforce a law that shall abridge the privileges of citizens of the United States. The Fifteenth Amendment says the right of citizens to vote shall not be denied or abridged on account of race, color, or previous condition of servitude. If the writer's information is correct, Mississippi has abridged the right solely in the basis of education, and it applies to white and black.

Kansas permits an individual foreign born, though he cannot speak a word of English, never heard of the constitution, to vote, provided he declares his intention of becoming a citizen and has lived six months in the state. The individual may never become a citizen, and yet continue to vote. What value is attached to the elective franchise?

Idaho, Wyoming, and Nevada had a population of 296,638, a male-voting population of 109,540, and counted nine in the electoral college. Oklahoma had a population of 398,245, a male-voting population of 109,361, and counted in the electoral college *zero*. Congress prevents these people from voting. Seven states each had a less male-voting population. Which is the more absurd, a state to continue to let foreigners vote, Congress to prevent na-

tural-born citizens from voting, or the intelligent portion of a state to cast and count the vote of the unintelligent and ignorant citizen?

Omitting the states where women vote (for there are no statistics at hand whereby the votes of females may be differentiated from the votes of males), only four states cast a greater per cent of the male voting population than Kansas. Eleven states cast less than 50 per cent, and six of these less than 25 per cent of the male-voting population. Maine cast 46.7 per cent, Massachusetts 49.1, Vermont 51, and no one complains of the smallness of the vote. Indiana cast the highest, 92.2 per cent, West Virginia 89, Kentucky 86.7, Ohio 85.8, Kansas 85.5, Louisiana 18.7, Mississippi 16, South Carolina 17.9. Now, the variation in the percentages cast in the states for President is not greater than the votes cast in the State of Kansas for members of the House in the State legislature. It will take the united votes of several legislative districts in western Kansas to equal the vote of Riley county, with her one representative.

But none of these things militate against the present method of election. To vote directly by the people involves a radical change in the Constitution by abolishing the equality of the states (to which the small states would object, and their objection must be final. See Article V of the Constitution). It opens the way for illegal voting, for bribery, for intimidation on a scale more extensive than now exists. An election might hinge on one vote, and that one vote anywhere, in any state. To change the method which has worked so well for so many years is to revolutionize the government and throw it from its very foundation. It is easier to destroy than to build again.

The method of nominating candidates for the presidency is an outgrowth of political wants, each party being a law unto itself. Parties usually put forth a platform; yet upon one occasion a party nominated a candidate, had no platform, and won the election.

The evolution of letters of acceptance by the different candidates is somewhat remarkable as to length. Omitting address and subscription, one candidate, in 1904, used a little over ten thousand words, another a little less than six thousand, a third about as many. Forty-four years ago, at a most critical period of our history, one candidate used nearly fourteen hundred, a second a little over one thousand, a third a little over eight hundred, while that leader of men and master of events, Mr. Lincoln, used one hundred thirty-five words, of which eighty-six were words of one syllable and sixteen of two syllables. B. S. MCFARLAND.

THE INDUSTRIALIST.

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LOCAL NOTES.

The Lecture Course Committee has decided to not make any reduction in the price of course tickets for the remainder of this term. The six remaining numbers, with a probable additional one, will certainly be worth more than the price of a course ticket.—*Students' Herald*.

Prof. W. O. Clure, formerly professor of public speaking at this College, writes from Lawrence University School of Expression, at Appleton, Wis., of which institution he is the director, that he and Mrs. Clure, "of course, are very happy with the young son," but miss the INDUSTRIALIST.

The football game here, November 18, between the College and the State University resulted in a victory for the latter by a score of 41 to 4. The game on Thanksgiving afternoon between the second teams of the College and the State Normal School stood 34 to 0 in favor of the former. A banquet was given the Normalites in the evening at Domestic Science Hall.

Prof. A. M. Ten Eyck has recently received a copy of the constitution of the American Federation Students of Agriculture and an invitation to this school to send delegates to the annual meeting at Chicago, during the International Live Stock Show. Each college is entitled to three delegates, to be appointed by the agricultural club of the school, if such a club exists; if not, by the dean of the school. The programs are furnished by individual schools, it being North Dakota's turn this year. R. J. Kinzer, while president of the agricultural club at Ames, Ia., was instrumental in the organization of this Federation. Our delegates will probably be selected from the teams which go from here to the stock show.—*Students' Herald*.

The Annual International Live Stock Show at Chicago has for some years offered a prize to the agricultural college that would send the best scoring student team to their stock judging contest. Last year the Kansas State Agricultural College made the best record, but was declared second best on account of clerical errors. This year the show will be held from November 26 to December 3, and another team will go there to take part in the contest. The following five students will form the team: G. O. Kramer, H. A. Ireland, F. E. Balmer, R. R. Birch, and F. W. Wilson, while Carl Wheeler, F. A. Kiene, J. H. Cheney, A. D. Colliver and D. H. Zuck will enter the corn-judging contest held at the show. Assistant R. J. Kinzer will chaperone the delegation in the "windy city."

The College enjoyed its usual Thanksgiving vacation on Thursday, but went to work again on Friday and Saturday. Life is too short and time too precious—too much is to be learned in youth to permit extended vacations at every opportunity. A few of the students may dislike such a business aspect of college work, but the great majority are glad that the Faculty takes this view of the matter.

Assistant R. H. Brown, of the Music Department, has published a "Bandman's Handbook," covering the many subjects that a bandman should know, such as regulation for membership, organization, instrumentation, formation and marching, care of instruments, salutes, ceremonies, tempos, helps and hints, etc. The booklet, a neat pamphlet of seventeen pages with brown paper cover, was printed by the College Printing Department. It will prove a handy pocket dictionary for young band members.

Karl Perfect, a freshman student from Jewell county, received injuries at the Rock Island railway yards last Sunday noon that may prove fatal. He was riding on the tender of an engine which was pulling the wrecking crane and two flat cars in from the scene of the freight wreck, which occurred about two miles west on Saturday evening. The engine was backing up, followed by the cars, and while the train was running about four miles an hour, at the crossing at the foot of Second street, young Perfect fell to the track, and the engine and three cars passed over his body, severing his left leg just below the knee, breaking one of his arms and badly bruising him. He was taken to the depot where physicians dressed the wounds, and later was removed to the Park Place Sanitarium. His parents and brother came Sunday night and were with him at the sanitarium during the whole week.

Historical Society

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♦ ♦ ♦

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
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THE INDUSTRIALIST.

VOL. 31.

MANHATTAN, KAN., DECEMBER 3, 1904.

No. 11

THE FORT HAYS BRANCH EXPERIMENT STATION OF THE KANSAS STATE AGRICULTURAL COLLEGE.*

THE Fort Hays Branch Experiment Station is part of the abandoned Fort Hays Military Reservation, which is situated two hundred ninety miles west of Kansas City on the Union Pacific "Overland Route." The Reservation embraces 7500 acres of land lying along Big Creek in Ellis county. The soldiers stationed at the post were withdrawn in November, 1889, after which time the buildings and the timber along the creek were subject to the usual neglect and abuse. In March, 1900, a bill passed Congress ceding this land to the State for the establishment of western branches of the Agricultural College Experiment Station and State Normal School, which act was approved in February, 1901. During the summer of 1899 the Reservation was erroneously reported open for settlement, and nearly every quarter was squatted on. Some of the filings were even accepted and homestead papers allowed. Upon the State's acceptance of the land, appropriations were made for beginning work, but were not available until a clear title was secured to all the land. Some of the squatters recognized the error and relinquished all claim. Others had made some improvements and were given leases of from three to five years.

The Boards of Regents of the two State institutions benefitted made a division of the land, which gave the Agricultural College nearly all of that along the creek which runs diagonally through the quarters for four miles. The land slopes gently back from the creek to an elevation of perhaps two hundred feet, giving a great variety of conditions.

The First Work done on the Branch Station was the breaking of prairie, which was begun in March, 1901. About 500 acres was broken and one-half of it planted to spring crops, consisting of Kafir-corn, sorghum, barley, Macaroni wheat, millet, corn, cow-

*The results of the work up to January, 1903, are soon to be published in a bulletin; the work of the present year will also be published later.

peas, soy-beans, peanuts, melons, etc. Also 22 acres of alfalfa was sown on the sod. A grass garden was planted containing 31 varieties, the seed being supplied by the United States Department of Agriculture. These crops, with the exception of macaroni wheat and barley, all made a very favorable showing. The wheat and barley were sown too late and on sod, so little could have been expected.

Fall Wheat.—In the fall of 1902, 200 acres were seeded to fall wheat. This included a variety test of 160 varieties, disking *vs.* not-disking sod, plowing *vs.* disking *vs.* stubble, corn-stubble *vs.* bean-stubble ground, and early *vs.* late breaking. In 1903 the area devoted to fall wheat was increased to 250 acres, including a test of 175 varieties, and the following methods of preparing land for wheat: Early disking of stubble and plowing later, mould-board plow, disc plow, no treatment following plowing, packer and harrow following plow, time of plowing the land (plats plowed two weeks apart, beginning July 31 and ending November 1), plowing *vs.* disking *vs.* drilling in stubble, and a rotation experiment for the determination of the effects of various crops and fallowing on the succeeding wheat crop. The latter test requires the continuous use of 160 acres. The crops used are Kafir, oats, beans, and barley.

Results of Wheat Work.—The variety test is in coöperation with the Bureau of Cereal Investigations of the Department of Agriculture. The varieties consist of direct importations of promising grains from regions similar in climatic conditions, etc., all over the world. A large number of the varieties being tried are hybrids of our best wheats. These latter are requiring a great deal of selection to fix types. Many have been divided and subdivided until there is a dozen or more types from a single cross. The work requires a careful taking of voluminous notes. Some of the direct importations are proving to be better yielders than the common wheats. A very small increase in yield will mean immense increase in the total receipts for winter wheat.

The crop of 1903 was much better than that of 1904. Our best variety, Kharkov, yielded 40 bushels in 1903 and but 20 bushels in 1904. This is accounted for by a lack of moisture in the spring of the present year and the prevalence of rust at ripening time. In the various trials of preparation of land for wheat, it may be said that the best farming gave the largest yield, *i. e.*,

early breaking, early plowing, followed by packing and harrowing, which are much the surer methods.

Spring Crops.—In 1903, 250 acres were devoted to spring crops, mostly small grains, and in 1904 practically the same amount. The work with spring crops includes principally the tests of varieties.

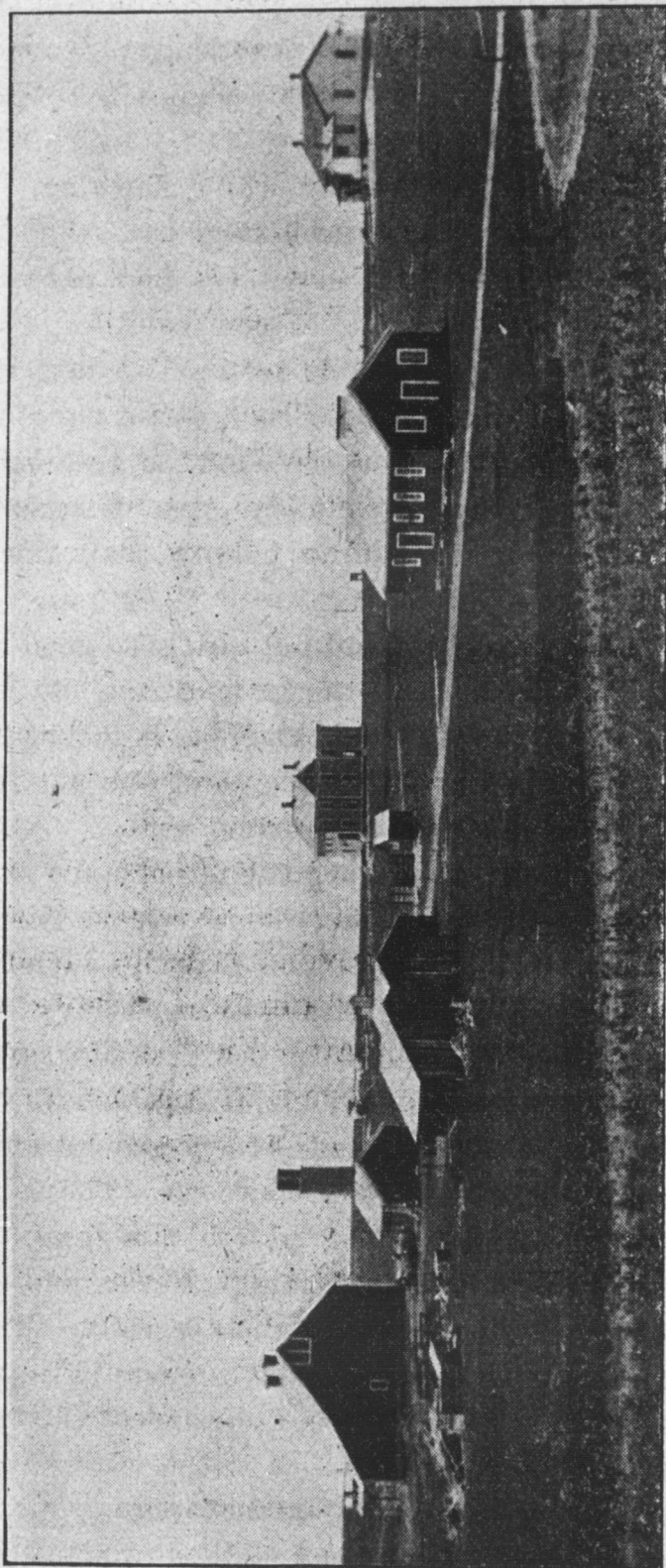
Spring wheat has not made a favorable showing. The durum or macaroni varieties are quite promising, but owing to the newness of the land, etc., they may not have had a favorable trial. The work has comprised a trial of fifteen varieties.

Oats proves to be a satisfactory crop. The test includes sixteen varieties. Texas Red, Rust Proof, led in yield in 1903, making 40.67 bushels per acre. But the Kherson, the leading oat with the Nebraska Station, made a yield the present season of 45 bushels per acre, which is considerably more than the Texas Red made.

Barley made a crop in 1903, but not nearly so good the past season. The spring was dry and the ground had not been plowed the previous fall, so it did not hold enough moisture to ensure germination. Barley is a reliable crop and one not fully appreciated. There are twenty-two varieties on trial.

Corn is generally considered of little importance as a crop this far west, but our experience the past two years has not verified this opinion. However, it is obvious that the variety must be a quick-maturing one, ripening within 75 to 90 days, or 100 at the outside. The season for corn after the first of August becomes very uncertain. The extensive fields of stubble left from harvest are great reflectors of the sun, and if there are not frequent rains the air becomes too hot and dry for corn. The early varieties would be out of the way, usually, before this time. In 1903 the season was favorable for larger, late varieties and a yield of 37 bushels was secured with a large, yellow variety. The year previous, 1902, the large, late corn did not make anything. The crop of the present season has not been gathered, but the medium early varieties have done the best.

Kafir-corn and sorghum are the main forage crops, and a large yield is always secured. The usual method of planting is to seed thick with a grain drill and cut as hay. However, a crop is more certain if the planting is done with a lister, the seed being put in very thick. This method admits of cultivation, and the crop may



Fort Hays Branch Experiment Station—Main Buildings.

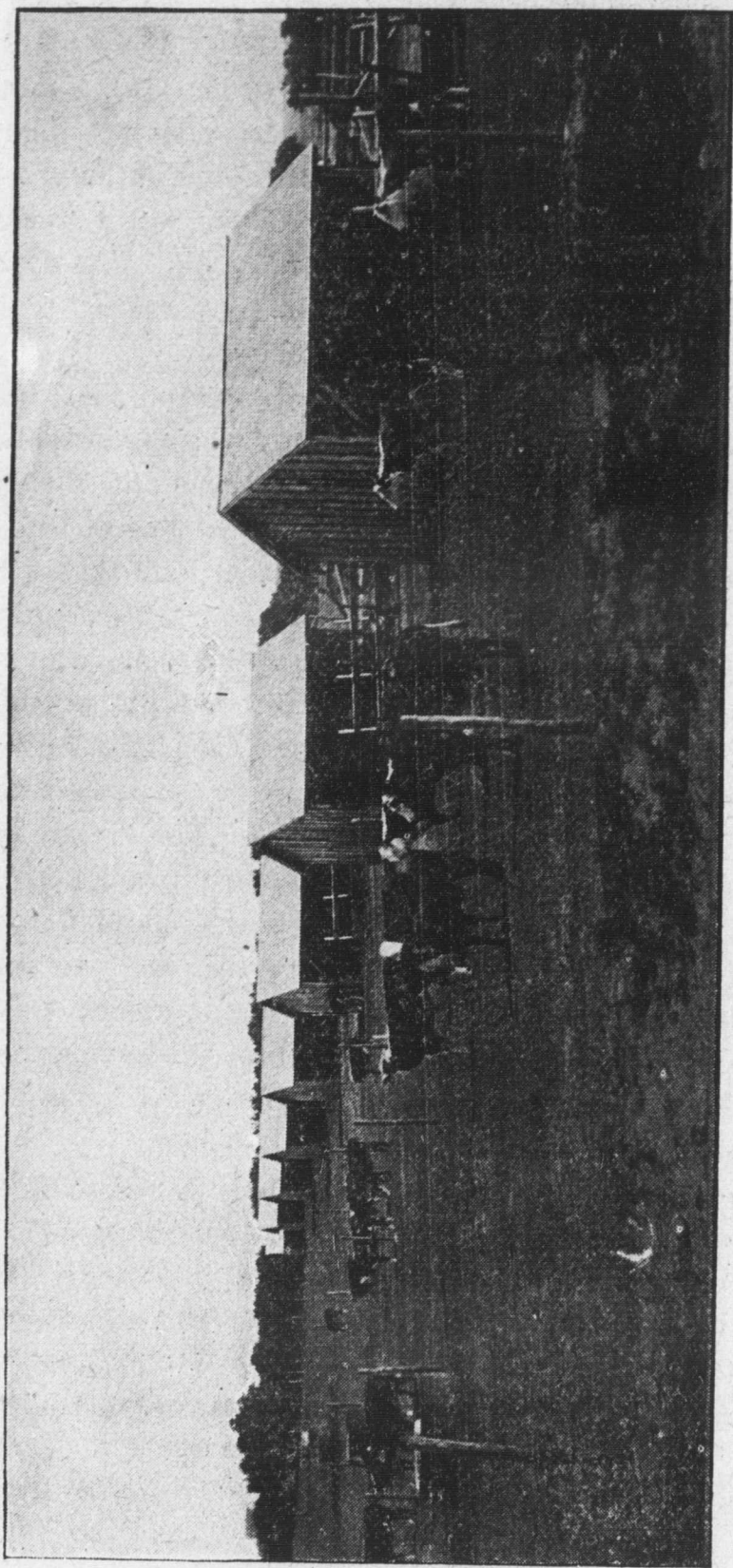
be harvested with a corn binder. It admits further of saving the seed, Kafir seed being nearly as valuable for feed as corn.

Alfalfa is but beginning to be appreciated. The general opinion is that it must have low, moist soil to grow in. It is a fact that the crop does better in such a location; but it does not follow that it will not produce profitably in less favorable locations. A field of alfalfa sown in the spring of 1903 was cut three times this, the second year, and a fair crop secured each time. It is not expected that alfalfa will do much for three to four years. Time is required for its roots to get down into the soil.

The spring of 1902 a field was sown on sod that previous to breaking was a prairie-dog town. The seed was sown May 28 and 29, and 57 days later a crop of alfalfa hay was cut, the growth in some places being twenty-four inches. Each succeeding year the crop has been better. It is safe to say that land that will grow a profitable crop of wheat will also grow a profitable crop of alfalfa.

Grasses, being of much importance to the western section, have received their share of attention. This work is in coöperation with the Department of Agriculture, and over forty varieties have been sown. These have been such as are most promising, largely natives of the western and drier sections. The Brome grasses—*Bromus inermis*, especially—are the most promising. This is proving a great favorite and seems better adapted to western conditions than any other. The agropyrons, panicums and elymus are promising. It will require more time to determine the value of grasses; but from present observations, the advice would be to go very slow about plowing up the native grass. Nature has the question very well solved.

Live Stock appropriations have admitted of obtaining, up to the present time a herd of 144 head of common cattle mostly breeding stock, with good Hereford and Shorthorn bulls with them. The object in this work is to breed up the common stock as an example of what may be done with that class. A beginning has also been made with hogs, three breeds being represented: Berkshire, Poland China, and Duroc Jersey. The result of the first feeding experiment credited to the Station follows:



Fort Hays Branch Experiment Station—Some of the Feed Lots.

BABY BEEF.

(Press Bulletin No. 134.)

A considerable amount of feed having been grown at the Fort Hays Branch Station during the Season of 1903, a feeding experiment was authorized. The feeds are those which can be grown on nearly every farm in this section of the State. At the time the experiment was planned, eighteen months had not yet elapsed since the first sod was turned at the Branch Station. Owing to the scarcity of labor, the feed lots were not completed until December, 1903. The calves were grade Hereford and Shorthorn, the former predominating, and were eight to ten months old when put in the lot. The lots are on well-drained ground, 66 x 300 feet each, inclosed by woven-wire fence. Each lot has a shingle-roofed shed open to the south, and good, clean water in a tank near it.

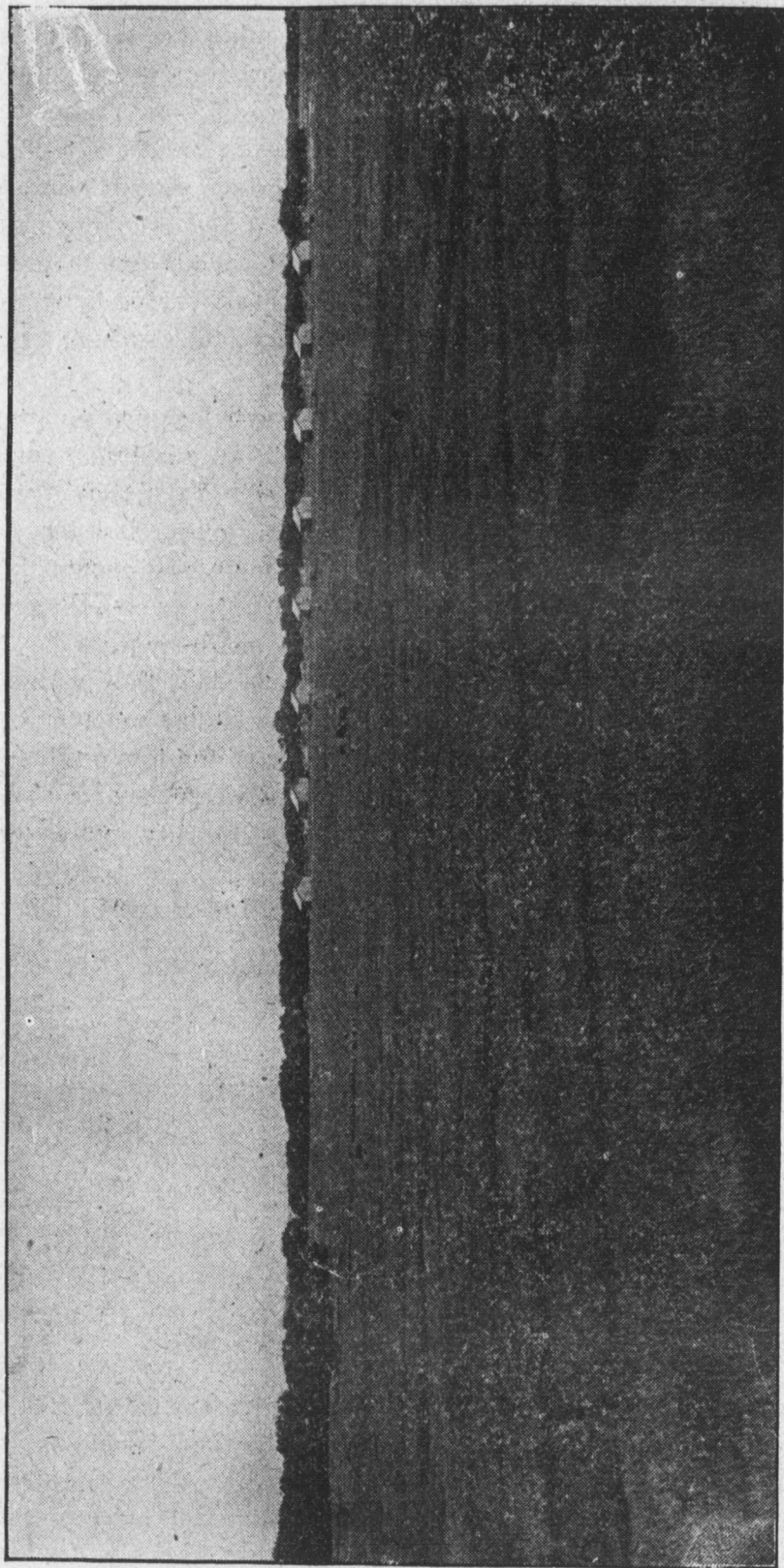
The 56 head of calves were carefully sorted and weighed so that the lots were made as nearly alike in quality and weight as possible. On December 21, after having been weighed on three consecutive days, they were put on feed. The feeding was begun at one pound of grain and ten pounds of roughage per day for each animal. This was increased gradually for more than two months before the lots were getting all the grain they would eat. The roughness was reduced as the quantity of grain increased. After they were feeding up to the limit, they were given just what they would clean up twice daily. The grain and hay were carefully weighed to each lot at every feed. The grain was all medium-finely ground and the lots getting corn were fed corn-and-cob meal until the last three weeks, when they received straight corn-meal. All the feed was of good, ordinary quality and grown on the Station farm.

The experiment continued 183 days, ending June 21, 1904. The following table shows feed and results of the seven lots:

LOT AND FEED.	Average weight at beginning.	Gain per head.	Daily gain per head.	Feed to make 100 pounds gain.		No. in good market-able condition.....
				Grain.	Hay.	
1. Corn and Alfalfa	399	338	1.85 lbs.	545	388	8
2. Barley and Alfalfa	401	297	1.62 "	519	421	6
3. Wheat and Alfalfa	413	284	1.56 "	404	432	6
4. Corn and Sorghum	397	224	1.23 "	715	592	4
5. Corn and Prairie Hay	406	262	1.43 "	641	381	5
6. Corn and Oats straw	405	251	1.37 "	717	354	4
7. Mixed Feeds*	403	328	1.80 "	473	414	7

* One-third each of grains and one-fourth each of different hays.

There was a more marked difference in the appearance of the lots than the results show, though the rank would be in the same order as the daily gains. The alfalfa lots fed much more evenly than the sorghum, straw, or prairie-hay fed lots, hence would have brought a better price on the market. It had been expected that all the lots would be sold on their merits, but as a few head in several of the lots were not in first-class condition, only part of these were sold. Thirty-six head were shipped to the Kansas City market. They averaged 694 pounds and brought five cents on a steady market, net-



Fort Hays Branch Experiment Station—Variety Garden.

ting \$33 per head. When bought for the experiment, the 56 head cost \$13 each, or \$3.22 per hundred weight.

In the table that follows, the feeds have been given approximate local prices, *i. e.*, corn 40 cents, wheat 65 cents, and barley 40 cents per bushel; alfalfa \$4, prairie hay \$3.50, sorghum \$3.50, and oats straw \$1 per ton.

LOT NUMBER.	Weight when bought.	Cost of lot.	Value of feed.	Lot weighed at close.	Selling value.*	Value of lot.	Gain per lot.
1.....	3193	\$102.91	\$ 97.10	5900	\$5.25	\$309.75	\$109.74
2.....	3206	103.33	118.66	5583	5.00	279.15	57.16
3.....	3305	106.52	119.07	5410	5.00	270.50	44.91
4.....	3173	102.26	94.16	4967	4.50	223.51	27.09
5.....	3251	104.78	92.24	5347	4.75	253.98	56.96
6.....	3236	104.30	88.35	5243	4.50	235.93	43.28
7.....	3220	103.78	118.69	5707	5.00	285.35	62.88

*From a study of the market at the time the 36 head were sold, it is thought that the lots would have sold for the price indicated.

A detail record of the labor for the 183 days' feeding was kept, from which the following extract was taken:

One man, 3½ hours daily, for 183 days @ 12½ cents per hour.....	\$ 85.75
One man, with team 2½ hours daily, for 183 days @ 25 cents per hour,	106.75
Grinding 1426 bushels of grain @ 1 cent.....	14.26
Total.....	\$206.76

Equipment.—The appropriations for the biennial period ending June 30, 1903, amounted to but \$6000. This was used largely in breaking, fencing, and purchasing a few necessary implements. The last legislature was more liberal, appropriating \$32,500 for the present biennial period. The principal items of this appropriation were for current expense, a boarding-house for employees, 30x50 feet, horse barn, 64x72 feet, water plant, with stone tower supporting reservoir, from which more than a mile of water piping supplies all buildings and stock tanks with fresh water; the building of fences, feed lots, sheds, and repairs on old buildings moved from the old Fort site and used for granaries, tool shops, and one residence; steam threshing outfit and plow, farm machinery of various kinds, fourteen head of horses, harness, wagon etc.; a bridge across the creek, 74 feet long, and an irrigation plant that has been operated in conjunction with the Irrigation Investigations Commission of the Department of Agriculture. The appropriation provided for current expenses would be inadequate were it not augmented by the sale of products of the Station. With full equipment and an extensive policy in experiments, the Station will be made nearly self supporting.

Irrigation.—A well 10 feet in diameter was sunk near the creek, reaching shale 40 feet from the surface, and a No. 4 centrifugal pump installed. This well contains sixteen feet of water

and has a flow of 20,000 gallons per hour. A tract of 22 acres of land is laid out in plats of 2 acres each, 60 rods long and so arranged that one-half of each plat is irrigated. Various crops were planted on the plats and, as only half was irrigated, the value of the irrigation is determined. In 1903 potatoes showed a gain of 100 per cent for irrigation, corn 30 per cent, and beets 35 per cent. Alfalfa irrigated before it had started in the spring of the present year increased over that not irrigated .09 per cent for the first crop, 29 per cent for the second, and 66 per cent for the third crop.

Horticulture and Forestry.—An orchard with three hundred trees of apple, peach, plum, cherry, and crab was planted in 1903. It has made a most excellent start. A shelter belt of osage, honeylocust, and cottonwood, and a nursery of 4000 evergreens, have also started a splendid first growth.

Weather Observations and Soil Moisture.—The Station is possessed of the following weather-recording instruments, which enables the keeping of quite a complete history of the weather: Anemometer, barometer, rain gauge, maximum, minimum, wet and dry bulb thermometers. The proper complement of books, similar to such as the Government weather bureau uses, can show the weather for any period desired.

Soil moisture determinations are made in connection with most of the farming operations. The question of moisture is certainly imminent, as the crops vary directly with the moisture available, and the moisture available is largely determined by the handling of the soil. It is seldom that the annual rainfall would not admit of the maximum crop if the moisture could be held and used by the crop when needed. Very little has been done along the line of the preservation of moisture in an experimental way as our land is yet too new; but it will doubtless be a very important part of the future work.

The Future.—With the present equipment and force, about all the work that can be handled is now under way. But as the leases to the land now held by squatters expire and more land is made available, more experiments may be conducted. The land now available has doubled from the expiration of leases and our equipment is not adequate.

It is not expected that any considerable amount more will be broken out, as a large acreage of pasture is desirable. The Sta-

tion now has 900 acres in pasture. At the termination of the last squatters' leases in 1906, the Station will have possession of 2500 acres of farm land. As this land comes in gradually the following is a conservative estimate for appropriations that will be asked from the next legislature, to further equip and develop the Station.

	1906	1907
1. Current expenses.....	\$6,000	\$6,000
2. Machinery.....	1,000	1,000
3. Fencing.....	500	500
4. Sheds.....	500	500
5. Improved live stock.....	2,000	2,000
6. Teams and equipment.....	2,000	2,000
7. Horse sheds.....	500	500
8. Hay sheds.....	300	300
9. Office and laboratory.....	1,000	.....
10. Granary and elevator.....	1,500	.....
11. Cottage.....	1,000	.....
12. Superintendent's residence.....	.....	2,500
13. Horticulture.....	1,000	1,000
14. General building repairs.....	500	500
15. Extension of water system.....	200	200
16. Irrigation dam.....	.....	800
Totals.....	\$18,000	\$17,800

It is believed that western Kansas, Nebraska, Colorado and Oklahoma feel a kindred interest in this Experiment Station. Its situation geographically gives the results obtained here a value to all the so-called "semi-arid west." The land is here, and the need for experimentation is apparent to all; so it lies with our State legislature to provide the means and the management to create the results. There is no question about the public being ready for the benefits to be derived.

J. G. HANEY, *Superintendent.*

O. H. ELLING, *Foreman.*

KANSAS TO THE FRONT.

Three cheers for the Kansas State Agricultural College! Last Thursday morning President Nichols received a telegram from Chicago containing the sentence "Hurrah for Kansas!" He read the telegram from the platform of the chapel and explained that it came from Assistant Shoemith, of the Farm Department, and meant that our agricultural boys had scored highest at the corn-judging contest of the International Live Stock Show. Yesterday the team, consisting of students Carl Wheeler, F. A. Kiene, J. H. Cheney, A. D. Colliver, and D. H. Zuck, returned and confirmed the report. The stock-judging contest has not been decided at this writing.

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LOCAL NOTES.

Miss Marguerite E. Barbour gave her classes in physical training a "gym. frolic," on Monday afternoon, November 21.

Prof. J. E. Kammeyer delivers an address before the Riley County Educational Association, at their meeting at Keats, this afternoon.

The fifty-fourth annual meeting of the American Association for the Advancement of Science will be held at Philadelphia, Pa., December 27 to 31.

Mr. and Mrs. J. S. McDowell will give a reception in Hotel Gillet, on December 15, to the members of the Board and the Faculty and to invited friends of the College.

W. J. Bryan will deliver his famous lecture, "The Value of an Ideal," at the opera-house Tuesday evening, December 6, for the benefit of the Manhattan Public Library.

Miss Stella Finlayson, a second-year student, met with an accident at the chemical laboratory Wednesday, in which she received a burn on the arm from acid being spilled on her.

Upon the recommendation of Captain Shaffer, the governor of the State has issued commissions as brevet captain, to all commissioned cadets who graduated last June. These commissions were received recently by the President and have been forwarded through the Military Department.

The final examinations of the fall term will be held on Thursday and Friday, December 22 and 23, and the new year's vacation will extend from December 24 to January 3. The entrance examinations for winter term will be held on Monday, January 2 and the short courses in agriculture and dairying will begin on January 3.

The Board of Regents will meet on Tuesday, December 13, and remain in session during the week. The meeting will be a busy one. In addition to the usual routine work there will be the dedication of the new Auditorium, the problem of needed legislative appropriations, the final settlements with a number of contractors, etc.

A preliminary list of purchasers of College lecture course season tickets was posted on the College bulletin boards, at Willard's drug-store, and at the Coöp. book-store on Monday, November 28, subject to correction, and all purchasers whose names do not appear should send them to the committee through the College post-

office, designating number of tickets purchased, by Monday noon, December 5. A correct list, with order of drawing, will be posted at the same places on Tuesday, December 6. The drawing of seats will occur at the Y. M. C. A. parlors, Ninth and Fremont, on Monday, December 12, at 1:00 P. M.

ALUMNI AND FORMER STUDENTS.

Minnie L. Copeland, '98, is still practising her profession as a graduate nurse, but has changed her address to 1933 Indiana Avenue, Chicago, Ill.

Marian and Amy Allen, of the class of '04, have the sympathy of their friends in the death of their father, which occurred recently in California.

Carrie (McCord) Roper, student in 1900, and Mr. Roper are happy because of the arrival of a baby daughter at their home in Manhattan on November 22.

Stella (Kimball) Tucker, '94, returns to her home at Aguas Calientes, Aguas, Mexico, Monday, December 5, after spending some months visiting her relatives here.

BORN: November 19, to Victor Emrick and Mary (Willard) Emrick, both of the class of '95, at Portland, Ore., a son. November 27, at Manhattan, Kan., to Emil Pfuetze, '90, and Mrs. Pfuetze, a son.

F. W. Bevington, second-year student in 1882, who gave the College such good service in the legislature last year, was not a candidate for reelection this year and is conducting a successful hardware business in Jewell.

Nora (Fryhofer) Webster, '95, and little daughter passed through Manhattan Thursday on the way from Denver to the home of her parents at Randolph, where she will make an extended visit. The business of Prof. E. H. Webster, '96, keeps him away from home practically all the time this winter.

W. C. Palmer, student in 1881, is the owner of a prosperous printing business at Jewell, Kan. He also has other remunerative property interests in the locality, and retains a high opinion of the Agricultural College. His cousin, O. G. Palmer, '87, now a lieutenant in the United States Army, is stationed in the Philippine Islands.

Lyman H. Dixon, '88, visited the College this week for the first time in fifteen years. Mr. Dixon for the last two and one-half years has been manager for Chas. A. Platt, architect and landscape architect, New York City. His address is 36 East Twentieth street. Mr. Dixon has changed materially in appearance, naturally, but, stranger still, was unable to recognize Professor Walters until he heard his voice. Mr. Dixon was on his way to Denver, Colo., his old home, to visit relatives.

C. A. Johnson '95, and Myrtle (Hood) Johnson, '96, of Russell, Kan., spent a few days last week visiting her parents, Mr. and Mrs. David Hood, and friends in town. They visited the College also and found many evidences of growth and improvement, but found few faces they knew among those here.

Prof. Albert Dickens, '93, and Bertha (Kimball) Dickens, 90, entertained the Faculty at their beautiful residence on Manhattan Avenue, Friday evening, November 25. The occasion was much enjoyed by all present, and we hope that this first entertainment of the Faculty by these genial friends will not be the last.

The name of J. R. Pearce appears as one of the authors of bulletin No. 24 of the Bureau of Soils on "The Centrifugal Method of Mechanical Soil Analysis." We here recognize Julia R. Pearce, '90, formerly librarian here and now assistant in mechanical analysis in the physical laboratory of the Bureau of Soils, Washington, D. C. Doubtless much of the interesting work recorded in this bulletin was performed by Miss Pearce.

Laura (McKeen) Smith, '95, came from Russell and visited several days last week with her parents at their home near Keats, and with her uncle L. A. McKeen in Manhattan. The families of L. A. McKeen and J. G. McKeen, with Miss Ethel McKeen of Russell and other friends, ate Thanksgiving dinner at the Keats home. Mrs. Smith and Mrs. C. A. Johnson spent a few hours on the 29th visiting the College and friends here.

E. C. Butterfield, '98, assistant horticulturist at the Arlington Experimental Farm, which is the field laboratory of the Bureau of Plant Industry, and across the Potomac from Washington, is taking his vacation and spending part of it visiting the home folks, the College, and College friends. He was here four years ago, but finds even in this time that the College has grown and several buildings have been added to the campus.

F. C. Sears, '92, now professor of horticulture in the Nova Scotia Agricultural College at Truro, visited Professor Dickens this week and inspected the changes on the College grounds. He regretted to find that the material advancement of the College in the way of buildings had altered the old campus in such a way as to make it seem less attractive to him. With Mrs. Sears (Ruth Stokes, '92), he has been spending his vacation in Kansas City, Kan., and returns within a few days to Nova Scotia.

Jane C. Tunnell, '89, and Bessie Tunnell, former student, are called to mourn the death of their father, Rev. R. M. Tunnell. Mr. Tunnell, formerly pastor of the Congregational church here, was well known to many students and held in high esteem because of his general interest in education and in the problems of youth, his prompt acceptance of the conclusions of science, and the breadth of his theology. He has lived in Kansas City for several years, where his death occurred November 29. He was buried a Manhattan, Thursday, December 1.

VOL. 31

NO. 12

THE INDUSTRIALIST

ISSUED WEEKLY BY

**KANSAS STATE
AGRICULTURAL COLLEGE**

♦ ♦ ♦

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Local Editor, - - PROF. J. D. WALTERS
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NO. 12

THE COMPOSITION OF AN ORATION.*

THE term "composition" is here used as applying equally well to written or to unwritten discourse. But whether previously written in full or pronounced without writing, the oration differs radically in many elements of style from the essay, which may be taken as the standard of discourse that is written for leisurely reading.

The reasons for these differences are to be found mainly in the all-important fact that oratory aims at the accomplishment of an object rather than at the discussion of a subject, and in the further fact that it must attain its object in a single utterance, without opportunity, on the part of the audience, of a second reading, of careful analysis, of leisurely consideration and of nice discrimination and appreciation of fine distinctions.

DIFFICULTIES OF THE ORATOR.—Since the oration must effect its purpose in a single impression, the orator has laid upon him a peculiarly heavy burden. His speech must be convincing but not frigid, vivid yet not lurid, enthusiastic without rant, earnest without cant, sparkling but not frothy, impressive yet not heavy, eloquent without bombast, fervid but never lachrimose, bold yet full of tact, positive yet conciliatory—in a word, it must possess the highest art but never be or seem artificial. The orator must marshal all his forces and march them, as Webster says, "Onward, right onward to his object." He aims, perhaps, in a brief half-hour, to "change the prejudices, opinions, habits of years." Surely no task heavier than his, no victory more glorious!

ADVANTAGES OF THE ORATOR.—But if special difficulties beset the orator, so, likewise, peculiar advantages are his. He meets his hearers face to face, rather than through the cold pitiless medium of the printed page. He meets them together, rather than as segregated, unsympathetic individuals. He has the advantage of the

*Copyright applied for.

flashing eye, the changing countenance, the thrilling voice, the animated gesture—all of those advantages arising from what, to conceal our ignorance, we term “personal magnetism.” Until human nature shall change, there need be no fear that oratory will lose its power. The public school and the daily paper cannot destroy or materially limit its proper field; books cannot steal its charms. The preacher, the lawyer, the parliamentary orator, the agitator, the reformer, and others, whose business it is to set the world to rights through public speech, need not be anxious lest increased diffusion of knowledge shall deprive them of their kingdom, or tremble lest they shall be dethroned and left to mourn because, like Othello, their “occupation’s gone.” So long as men need to change their actions, or, at least, so long as men are not intuitively of one opinion as to what action should be in every case, so long will there be opportunity for the exercise of persuasive speech.

THE ORATOR BOTH “BORN” AND “MADE.”—A common opinion, it is to be feared, among students and other young men who have ambition for public speaking is, that orators are born, not made. Those who hold this opinion argue that he who has the “divine afflatus,” the oratorical inspiration, will, when occasion arises, speak effectively and eloquently, whether he has studied the maxims of the rhetoricians or not; while he who has not this heaven-born spirit can never become an orator, though he know the rules of the books from title-page to “finis.”

This criticism is based on a radical misconception of the nature and purposes of oratorical precepts. These precepts are not arbitrary inventions in which the rhetoricians insist that the would-be speaker shall wrap himself until he is only a mummy of his real self before they will allow him to be called an orator. On the contrary, they are the statement of principles which the great masters of assemblies of all ages throughout the world have, consciously or unconsciously, exemplified in their speeches. These principles must likewise be observed by all who attain success in this noblest of all arts, and they that do not learn them from others must struggle up to them through the tribulation of personal experience and probably humiliating failures.

As a matter of fact, orators are both “born” and “made.” Call the roll of the immortals among them and you will find that, with hardly an exception, they have been not only men of natural genius but equally men of acquired power. Demosthenes,

Aeschines, and the other masters of Athenian eloquence, gave years of the most assiduous study in preparation for their art. So with Cicero. Among the moderns may be named Burke, Fox, Sheridan, Lord Chatham, Pitt, Bolingbroke, Grattan, Curran, in England; and in America, Clay, Calhoun, Webster, Phillips, Sumner, Seward, Everett; while among preachers shine such names as Beecher, Spurgeon, Alexander Maclaren, Phillips Brooks, Bishop Simpson, and a host of others almost as great. These all "obtained a good report" through a combination of native genius and assiduous toil. They did not despise, they did not consider it wise to ignore the principles of oratory as set forth in the books. All of them studied, some of them for years, the precepts of effective speech, and everything else that would fit them for success in making speeches themselves. In other words, they supplemented their own natural aptitude by the wisdom and experience of others. If such men thought it worth their while to learn the art of oratory by study, surely no one can safely hope to be beyond the need of such study.

QUALITIES OF THE INTRODUCTION.—In estimating the qualities that are particularly useful in an oration, it is appropriate to consider, first, the features that peculiarly pertain to the introduction.

Brief.—The first thing to be said of the introduction is that it should be *brief*. The young writer and speaker always labors under the temptation to extend this part of his discourse beyond reasonable limits. Whether it is because he fears that he may not find enough to say or whether it is because he thinks that he has so much to say, he is in danger of saying more than is necessary or useful. It should not be forgotten that the oration is a work of art, and, like other works of art, it must possess the qualities of symmetry and proportion. Otherwise it can have no beauty and little power. The oration should not be a polywog—all head. It may rather be likened to a building. The introduction is the front porch; the discussion, with its various divisions, constitutes the body of the house divided into its several rooms; while the conclusion is the back porch. The length of the introduction will be properly determined by the dignity, nature and proposed extent of the discourse as a whole. In proportion to the entire speech, then, the introduction should be as brief as is consistent with perfect lucidity and with its prime purpose of arous-

ing interest in the theme. The front porch should never be larger than the house itself. Its purpose is to lead as directly, as easily and as charmingly as possible into the main body of the building.

First Sentence, Brief.—In harmony with this principle, it follows that the opening sentence of the introduction should, also, be brief. Blair says: "A first sentence should seldom be a long, and never an intricate one." As a rule, let this sentence be a simple, declarative, unpretentious statement of a fact or a principle. It is usually safe to assume that an audience is comparatively indifferent to both the speaker and his theme. It is not wise, therefore, to lay too heavy a burden upon the attention or the intellect of one's hearers. A brief, modest opening sentence will give them little to do by way of grammatical interpretation, and will help gain their respect for the speaker's sincerity and good sense.

Simple.—The introduction should also possess the quality of *simplicity*. Good taste requires that this part of the discourse be neither too forcible, too figurative, or too highly illustrated. These qualities are always liable to seem bombastic, and of all places the semblance of bombast in the introduction is ridiculous and repulsive. Only when the circumstances are such that the interest of an audience in the subject is already aroused will very energetic or highly figurative language be advantageous. When, however, a previous speaker has presented a theme, or when the course of events has centered the thoughts of the people upon it, so that their interest is kindled and their passions are excited, the speaker may appropriately in his introduction make use of more picturesque and more impassioned speech than would otherwise be permissible. In a way, his theme is already introduced, and what would ordinarily be extravagant is now appropriate.

Examples.—An interesting illustration of a simple and yet rather highly figurative exordium is found in Webster's famous speech on the Foot resolution, better known as the "Reply to Hayne:"

"*Mr. President:* When the mariner has been tossed for many days in thick weather, and on an unknown sea, he naturally avails himself of the first pause in the storm, the earliest glance of the sun, to take his latitude and ascertain how far the elements have driven him from his true course. Let us imitate this prudence, and before we float farther on the waves of this debate, refer to

the point from which we departed, that we may at least be able to conjecture where we now are. I ask for the reading of the resolution."

So he brought his hearers back to the point of departure.

Under ordinary conditions such a figurative introduction would seem tumid; but Webster did not pronounce it under ordinary conditions. When he arose, the debate had been in progress for days. Colonel Hayne, senator from South Carolina, had made a brilliant speech, characterized by all the fervid eloquence, grace of diction and bitterness of spirit peculiar to some of the greatest southern orators of those days. The admirers of Hayne and the sympathizers of his cause were jubilant. They boasted that he had won a great victory and could not be successfully answered. The friends of Webster and of the Union, on the other hand, were filled with anxiety, and feared that even the "god-like Daniel" might not prove equal to the task of replying to the brilliant southerner. Public excitement was at white heat. The Senate chamber was crowded. Every nerve was tense; every whisper was hushed to silence; every eye was fixed upon the speaker; every ear was strained to catch the first swelling note of that mighty organ-voice. In a word, the conditions under which he spoke were such that no metaphor, no illustration, no amount of energy would have seemed extravagant if, indeed, it could equal the demands of the occasion. So, good taste not only allowed but required such an introduction in order to satisfy the excited feelings of the audience.

Compare with this glowing exordium the introductory sentences of Webster's masterpiece as a dedicatory orator, delivered at the laying of the corner-stone of Bunker Hill monument:

"This uncounted multitude before me and around me proves the feeling which the occasion has excited. These thousands of human faces, glowing with sympathy and joy, and from the impulses of a common gratitude turned reverently to Heaven in this spacious temple of the firmament, proclaim that the day, the place and the purpose of our assembling have made a deep impression on our hearts."

Less picturesque, less figurative, less passionate than the preceding example, but straightforward, dignified, and calm, these introductory words were, likewise, in perfect harmony with the occasion on which they were uttered. The multitudes to whom

they were spoken were not, as on the other occasion, quivering with the passions excited by a sectional debate; they were rather assembled to commemorate a great event in our history and to do honor to those who had offered their lives as a sacrifice to liberty. Consequently the great orator's opening sentences were simple and less impassioned than in the other instance.

Not too Figurative.—In harmony with the principle under discussion, good taste forbids the use of exclamations, rhetorical interrogations, apostrophe, and like figures in opening sentences. Such expressions at the outset give too great a shock to the hearers. A premature explosion is never pleasant and may be dangerous. Dynamite in a speech is a good thing, but it must be put in the right place and be fired at the right time. If touched off too soon, it will blow to pieces him who applies the torch as well as destroy the spectators.

Interesting.—Another quality of style that should be possessed by the introduction is that of being interesting. Winning an audience is much like fishing for trout. You must get a rise at the first cast of the fly, or you may find it difficult to get any rise at all in that place. Hearers are exceedingly wary, and he that would "put his hook in their nose" must present them an attractive "lure." That lure is the introduction. Its main purpose, so far as the speaker's relation to his audience is concerned, is to arouse an interest in the minds of his hearers towards himself and his theme, to awaken within them a receptive spirit, to render them well-disposed. He must aim, therefore, to make this part of his speech, in particular, above all things interesting and attractive. By charm of manner, by felicity of phrase, by earnestness of spirit, by aptness and appropriateness of thought—by every honest means, let him seek at the outset to win the attention, the respect, the confidence, the sympathy, the favor of his audience. If he succeed in this attempt the victory is half won. Thenceforward he can march straight onward to his goal.

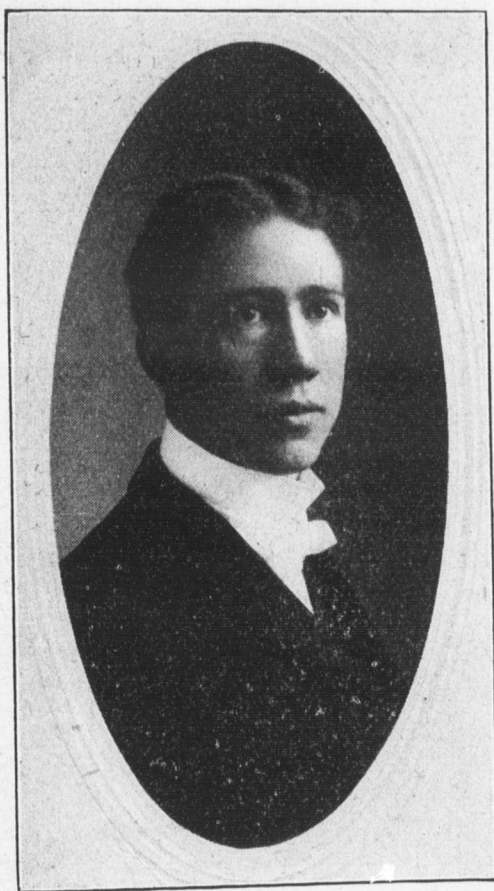
CLARK M. BRINK.

Professor McFarland's article on "A Presidential Election," published in No. 10 of the INDUSTRIALIST, has had quite a run in the newspapers of the State. We have seen reprints and excerpts in several papers, including the *State Journal* and the *Daily Manhattan Republic*.

KANSAS TO THE FRONT.

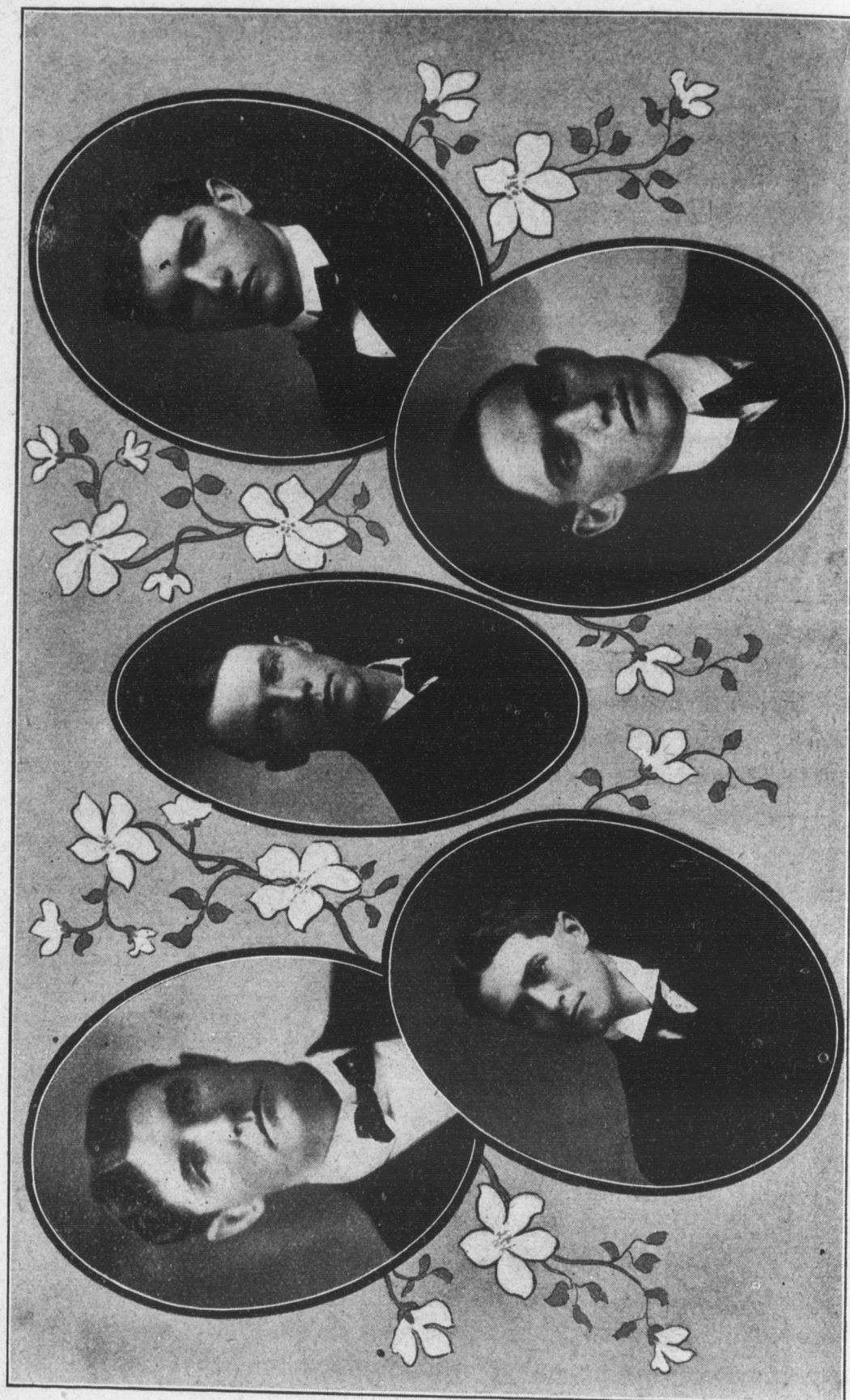
K. S. A. C. Boys Win Over Iowa in Corn-Judging Contest. Proof of the Thorough and Practical Training Received at the Kansas State Agricultural College.

On November 28, a corn-judging team of five students from the Kansas State Agricultural College took first honors at the corn-judging contest at the International Live Stock Exposition in Chicago, and carried off the beautiful \$1500 Cook trophy, which was offered by Mr. A. E. Cook, of Odebolt, Iowa, to the college whose students showed the most efficiency in the judging of corn. "This trophy is of bronze and glass, thirty-six inches high. The trophy has a triangular base ornamented with wreaths of corn grouped around scales, typifying the exactness and accuracy needed in modern corn breeding." In the center are three glass cylinders to contain three ideal ears of corn. "On one side of these cylinders stands a bronze statue of an Indian chief in war dress, representing the original conditions in the corn belt. On the other side stands a bronze statue of Charles Willard Cook, father of Albert E. Cook, who purchased the Brookmont farm when it was a wild prairie roamed over by the Indians. The statue of Mr. Cook, Sr., represents the spirit of energy, skill and accuracy of the modern corn breeder. Capping the trophy is a bronze globe of the world the position of which, supported by the ears of corn, indicate King Corn as the foundation of the prosperity of the world."



Asst. V. M. Shoesmith.

The students were given five samples of corn of ten ears each, three samples to be judged as pure-bred types and two as farmers' corns regardless of type. It was required that the first, second and third best ears be selected and the reasons given for the placing.



Carl Wheeler. A. D. Colliver.

D. H. Zuck.

J. H. Cheney.

F. A. Keine.

The Kansas boys, with their grades as determined by expert judges, were as follows: D. H. Zuck, Manhattan, 360; A. D. Collier, Galva, 350; J. H. Cheney, Great Bend, 337; F. A. Kiene, Valencia, 324; Carl Wheeler, Bridgeport, 321.

The corn was judged and the papers were graded by the following committee: Prof. W. M. Hayes, of the University of Minnesota, and Messrs. Dean and Eugene Funk, of the Funk Brothers corn-breeding farms, of Bloomington, Ill.

Competition was open to the world, but the Iowa and Kansas teams were the only ones qualified for the contest. The Iowa Agricultural College is considered as ranking first among the agricultural colleges in the study of corn, and has for its chief in agronomy (including corn judging) Prof. P. G. Holden, the man who originated "corn judging," and first introduced corn as a subject for study at the Illinois Agricultural College in 1897. The Iowa team was in charge of Asso. Prof. L. S. Klink, who had given his team the best possible training. The Kansas State Agricultural College is a beginner in "corn-judging" work, and the regular course in the study of corn was introduced only a little over a year ago, yet in a fair contest the K. S. A. C. team scored thirty-eight points above their opponents and won the \$1500 trophy. This is a great victory for the K. S. A. C. and speaks well for the character of the instruction received at this institution, and is a special compliment to Asst. V. M. Shoesmith, who teaches the "corn judging," trained the boys in their work, and had charge of the winning team at the International.

The Kansas State Agricultural College Experiment Station has lately issued bulletin No. 125, "Experiments with Dairy Cows." This is an extensive publication, giving experiments some of which have extended over three or four years' time and touch upon nearly every phase of the dairy industry. Among the experiments recorded are some with ordinary grade cows, some with grade cows selected for their dairy points, and other with pure-bred animals. Experiments are also described in feeding cows, both in the stable and on pasture. Much information is given concerning testing milk and the conditions which cause variation in the results. This bulletin, like all the others of the Station, will be sent free of charge to any farmer applying for it.

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LOCAL NOTES.

The football team had its picture taken a week ago.

The library has lately received about fifty volumes of reference books from the catalogue of McClurg & Company, Chicago.

A company has been organized by leading citizens of Manhattan for the purpose of manufacturing coal gas for fuel and illuminating purposes.

The advisory board of the Y. M. C. A. met last Monday and discussed the new building; that is, the canvass for the necessary funds. The amount of money pledged so far is about \$16,000.

The annual meeting of the Manhattan Horticultural Society will be held at Horticultural Hall, Thursday, December 15, at 3 o'clock P. M. The following program will be presented: "Success and Failures of the Past Season," A. J. Nicholson; "Sweet Potato Culture," Henry W. Moore; election of officers for the ensuing year; election of delegates to the State Society; reports.

All who attended the farmers' institute were very greatly pleased with the success of the meeting, the interest and value of the subjects discussed, and particularly were they well pleased with the representatives of the K. S. A. C.—Professors Dickens and Kinzer, and Mrs. Henrietta W. Calvin, the professor of domestic science. Mrs. Calvin's subjects not only pleased the ladies, but the men as well.—*Anthony Republican.*

The program is out for the Kansas State Horticultural Society's thirty-eighth annual meeting at the capitol building, Topeka. Prof. J. T. Willard, of this College, is down for a talk on "The Mission of our State Agricultural College," on the evening of the first day; Professor Popenoe will speak on "How to know the Commoner Insect Pests." in the afternoon of the second day. Professor Dickens will present a number of committee reports. The usual holiday rates by all railroads.

The State Teachers' Association at Topeka will open its session Tuesday evening, December 27. The address of welcome will be delivered by Governor-elect E. W. Hoch. The lecture Wednesday night, December 28, by G. Stanley Hall, president of Clark University. The lecture Thursday, "Shakespeare's Tragedy of Greatness," Rev. W. A. Quayle. One fare plus fifty cents round trip. Tickets on sale December 26 to 29, limited to return December 30. All teachers should attend this feast of good things.

Charles E. Paul, S. B., assistant professor of mechanical engineering at the State Agricultural College, tendered his resignation to President Nichols last Thursday, having accepted the position at the head of the engineering department in the Territorial Agricultural College of New Mexico, located at Mesilla Park. Professor Paul will leave Jan. 1. The new position carries with it an increase of salary. Professor Paul is a graduate of the Massachusetts Institute of Technology, a first-class teacher and student, and a correct character in every respect. The Kansas State Agricultural College realizes that it will be a difficult matter to replace him.

The Athletic Association has elected the following officers for the ensuing year: President, H. R. Heim; vice-president, C. I. Weaver; secretary, Ernest Adams; treasurer, Assistant Dean; general manager of football team, Clyde Lewis; student member of football committee, T. Carlson; Faculty member, Assistant Ahearn; student member of baseball committee, C. Walker; Faculty member, Professor Remick; student member of tennis committee, T. Fish; Faculty member, Assistant Professor Halstead; student member of track committee, S. C. Cunningham, Faculty member, Instructor McClenahan; general manager of athletics, Assistant Professor Hamilton.

The new poultry barn and attached breeding pens are nearly completed, and are models of construction and convenience. They are located directly east of the granary, with the pens extending south into the orchard. The barn proper is one hundred feet long and twelve feet wide and is built of solid framework. The roof is covered with a new roofing material called rubberoid. The interior is divided into ten rooms, each measuring ten by twelve feet. The pens measure ten by sixty-four feet each, and the fences are made of high oak posts and chicken wire fencing. The south side of the whole structure is open and covered with the same wire fencing, but provision is made to close the open panels with boards in the winter. The building will be neatly painted when finished.

The *Anthony Republican* draws attention to the fact that our assistants in the Domestic Science Department, Miss Rose and Miss Pancake, are properly named and that the euphony of their names may be responsible "for a good part of the increase in interest and attendance in that useful line of study." Far from denying the *Republican's* opinion, we will add that we have in our Faculty also a Shaffer (the German word for worker), a Price, a Rice, a Freeman, a Kyle (the German word for wedge), a Shoemaker, a Booth, a Dearborn, a Wheeler, a House, a Ten Eyck (ten oaks), a Lund (the Scandinavian term for land), and a Foster, and we assure our neighbor in Barber county that they are all doing credit to their names. What the names Karmeyer, Popenoe, Wabnitz, Eyer, Rupp, Augspurger, etc., mean we shall tell some other time.

The regular supply of College catalogues being exhausted President Nichols has had an abridged edition of sixteen pages printed to supply the demand until the next regular edition is published, which will be about May, 1905. In this edition will be found terms and vacations, courses of study, terms of admission, expenses, etc. The pamphlet was issued as number 9 of volume 31 of the INDUSTRIALIST.

Karl Perfect, the student who was hurt by falling from a moving engine in the Rock Island yards on Sunday, November 20, died from his injuries at the Park Place Sanitarium, Friday morning. From the time of the accident Karl bore the pain with patience and was always in good spirits, although there was not much promise for his life. He was eighteen years old the day following the accident. His father and mother were constantly at his bedside at the sanitarium and the nurses and physicians did everything in their power to save the young man's life. Mrs. J. W. Berry, of Jewell City, wife of Regent Berry, who is a neighbor of the Perfect family, was also with Karl for a week and comforted him. The body was taken to the home at Jewell City Friday afternoon, where the remains will be laid to rest.

ALUMNI AND FORMER STUDENTS.

Ava (Hamill) Tillotson, '92, writes to have her INDUSTRIALIST changed from Olathe to Newton.

Clara Goodrich, '03, is teaching the fifth and sixth grades in the Jewell City schools and is much interested in her work.

F. M. Jeffery, '81, and wife are very happy in the birth of a son, December 4. They are still living at Seattle, Wash.

Claud Masters, '99, clerk of the Chickasaw town-site commission, and located at Ardmore, I. T., visited the College yesterday.

Bret R. Hull, '97, and his father, lumber and hardware merchants of Alta Vista, Kan., have purchased the hardware business of P. W. Zeigler, of Manhattan, Kan. The young man will assume the management of the business within a short time.

Margaret Norton, sophomore in 1903, has returned from St. Louis, where she has been taking instruction in dressmaking. On her journey she was in the wreck of last Saturday night on the Missouri Pacific, and was said to be one of but six who were uninjured.

Harold T. Nielsen, '03, is again back at the Iowa State College, doing graduate work, and expects to be there for four months or more. He retains a warm spot for his Alma Mater and the Printing Department. He thinks our institution profits materially in the quality of its printing because of the connection of that department with it.

Elizabeth Finlayson, '04, has resigned her position at Christ's Hospital, Topeka, and will spend the winter in Texas as the companion of a lady recently a patient at that institution.

The name of Geo. O. Greene, '00, now of the Massachusetts Agricultural College, appears on the program of the New Hampshire Horticultural Society for an address on "Growing and Buying Nursery Stock."

Monday, November 21, was the birthday of another boy who will claim Mr. and Mrs. R. W. Clothier as parents. Mrs. Clothier was Elizabeth Blachly, a former student, and Mr. Clothier graduated with the class of '97.

A. D. Whipple, '98, has resigned his position with Butler Brothers' wholesale department and accepted a position in the retail department of Marshall Field & Co., of Chicago. His address is 531 W. 61 Place.—*Students' Herald*.

J. E. Tanner, sophomore student in 1902, visited the College last week. He remarked the difference between the dairy barn and the new chemical laboratories in which to do laboratory work. Since leaving here Mr. Tanner has graduated from the law department of the University of Nebraska, and is now in the employ of the Aetna Insurance Company, with headquarters at Topeka.

M. V. Hester, '94, editor of the *Onlooker*, Haviland, Kan., made a flying trip to the College between trains on the 3rd. He had been to the great exposition and was on his way to Denver. Mr. Hester had not visited the College since his graduation. He has been farming and later publishing the *Onlooker*. He is about to give this up, however, and take a course in a Bible school in Cleveland, O.

Leslie A. Fitz, '02, assistant in the Bureau of Plant Industry, is now stationed in California. He has been sent there to establish two stations for the Bureau, one at Yuba City, where he now is, and the other in the San Joaquin valley, near Modesto or Merced. These will be stations for experiments in cereal culture and improvement. Mr. Fitz will be in charge of the work there until the first of next July, and may not be back to Kansas in the meantime, though he hopes to be.

The following items are clipped from the *Jayhawker*:

Helen Monsch, '04, is at present studying domestic science at the University of Chicago. She is living at Kelly Hall.

James G. Savage, '04, is taking a three-years' apprentice course in the Santa Fe shops at San Bernardino, Cal. His address is 852 Fifth street.

W. O. Gray, '04, is first assistant in chemistry at the Kansas City Medical College. His address is 1316 Broadway, Kansas City, Mo.

Program

of the Dedication Exercises of the Auditorium
Kansas State Agricultural College

~~~~~  
Wednesday, December 14, 1904  
~~~~~

Afternoon, 2 o'clock

Orchestra.

Prayer.

Address of Welcome, - - - Regent Fairchild
Wanderer, - - - Professor Valley
Aims and Needs of K. S. A. C., - President Nichols
Within this Sacred Dwelling, - Professor Valley
Dedication Address, - - - Pres. A. B. Storms
Iowa State College, Ames, Iowa.
Music, - - - - - College Band

~~~~~  
Evening, 8 p.m.

Overture, - - - - - Hall  
COLLEGE ORCHESTRA.  
Festival Hymn, - - - - - Buck  
K. S. A. C. CHORAL UNION.  
Tannhäuser, - - - - - Raff  
MISS AUGSPURGER.  
The Two Grenadiers, - - - - Schumann  
PROFESSOR VALLEY.  
9th Concerto, - - - - DeBeriot  
MR. BROWN.  
A Flag Without a Stain, - - - - While  
COLLEGE GLEE CLUB.  
(a) Murmuring Zephyrs, - - - - Jensen  
(b) Rhapsody No. IV, - - - - Liszt  
MISS AUGSPURGER.  
(a) Absent, - - - - Metcalf  
(b) Had a Horse, - - - - Corbay  
PROFESSOR VALLEY.  
The Heavens are Declaring, - - - - Beethoven  
CHORAL UNION.  
America, - - - - Carey  
AUDIENCE.

Historical Society

VOL. 31

NO. 13

# THE INDUSTRIALIST

ISSUED WEEKLY BY

**KANSAS STATE . . . .  
AGRICULTURAL COLLEGE**

♦ ♦ ♦

*Editor-in-Chief, - PRES. E. R. NICHOLS*  
*Local Editor, - - PROF. J. D. WALTERS*  
*Alumni Editor, - PROF. J. T. WILLARD*

♦ ♦ ♦

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# THE INDUSTRIALIST.

VOL. 31.

MANHATTAN, KAN., DECEMBER 17, 1904.

No. 13

## THE PROTEIDS OF FLOUR.

FOR ages wheat has been the staple food of a large proportion of mankind. This is doubtless due very largely to the fact that wheat flour, unlike the meal obtained from other grains, has the property of yielding with water a tenacious dough capable of retaining, and becoming distended by, the gases produced when fermentation is brought about by the incorporation of yeast, and that this light porous mass yields on baking a loaf more palatable than the unleavened cakes made from other grains. Of the common cereals, wheat and rye are the only ones from which leavened bread can be made, and rye is inferior in this respect.

The elasticity and tenacity of the dough made from wheat flour is due to the presence of a complex substance called gluten. This is easily obtained as a soft, insoluble, gummy substance by kneading flour in a stream of running water, which washes out the starch, etc., present. Gluten is not a simple substance, but is considered to be formed by a sort of mechanical union of *gliadin* and *glutenin*, two proteids present in considerable amount in wheat. Gliadin, which constitutes the larger part of the gluten, is, when pure, a white substance yielding with a little water a sticky mass, which on the addition of a trace of common salt becomes rubbery and elastic. This mass is not gluten, however, as when kneaded under water it softens and mixes with the latter. It is a peculiar fact that although gliadin is almost insoluble in either very weak or very strong alcohol, it is very soluble in that containing twenty to thirty per cent of water. While soluble in pure water, it does not dissolve if a little common salt is added. Impure gliadin was prepared something like a century ago by Einhof, and the name subsequently given to it on account of its resemblance to glue. A large number of the proteid compounds "discovered" in wheat by later investigators were doubtless gliadin more or less impure.

Glutenin, the other constituent of gluten, is much less soluble



than gliadin, not dissolving in water, salt solutions, or alcohol. It is soluble in dilute acid and in alkaline solutions, however. Mixed with water it yields a stiff mass, but no gluten. Its function in the gluten is apparently to furnish stability to the otherwise soft gliadin. Osborne, to whom we owe most of our knowledge of the subject, says that "the glutenin imparts solidity to the gluten, evidently forming a nucleus to which the gliadin adheres and from which it is consequently not washed away by water." He does not discuss, however, the cause of this adherence. The physical chemist might explain this, that the two proteids existed together partially in a state of solid solution. If a plate of lead be pressed against a plate of gold, if the surfaces of both are clean they will be found to stick together; and if allowed to remain in this position some time it will be found on cutting them apart that there is no sharp surface of separation between the gold and lead—gold has dissolved in the solid lead, lead in the solid gold. If we assume that gliadin and glutenin are soluble in each other we can thus account not only for their adherence to each other, but also for the fact that the mixture does not behave toward water exactly as we would expect it to if its properties were the mean of the properties of the constituents.

Besides the proteids of the gluten at least two others are known to exist in flour, although in relatively small amounts. One, a globulin, is usually known as *edestin*, although it has been shown comparatively recently by Osborne, its discoverer, to be different from the proteid first named *edestin* by him, and obtained from another source. The other, *leucosin*, is an albumen.

The nitrogenous bodies known as amido compounds are present in wheat, though in very small amounts in the sound grain. Asparagin, amido-succinamic acid, is perhaps the principal one.

The following analyses are some made of typical Kansas flours, the object having been to throw more light on the connection between the chemical composition and bread-making qualities. It is perhaps naturally to be expected that the relationship would be more or less involved, as the flour, being a complex mixture, its properties must be influenced by a number of factors.

The first table gives the result of the regular food analysis made by the official methods; the second, the estimation of the proteids, using the method of Prof. G. L. Teller, of the Chicago Institute of Baking and Milling Technology. The third table shows the per-

centage of gliadin in the gluten from the different samples, a factor differing little from 62.5 in any case.

TABLE I.—RESULTS OF ANALYSES OF FLOUR.

| No. | Name or Brand of Sample. | Source.                                    | Moisture..... | Ash..... | Crude Protein... | Fat..... | Crude Fiber..... | Carbohydrates (Except Fiber) |
|-----|--------------------------|--------------------------------------------|---------------|----------|------------------|----------|------------------|------------------------------|
| 1   | Big Four.....            | Page Milling Co., Topeka, Kan.....         | 10.84         | .40      | 12.62            | .84      | .33              | 74.97                        |
| 2   | Golden Rod.....          | Page Milling Co., Topeka, Kan.....         | 11.12         | .49      | 11.89            | .91      | .24              | 75.35                        |
| 3   | Fortis.....              | Manhattan Milling Co., Manhattan, Kan..... | 11.70         | .66      | 12.44            | 1.27     | .31              | 73.62                        |
| 4   | Low Grade.....           | Manhattan Milling Co., Manhattan, Kan..... | 10.85         | .60      | 12.46            | 1.37     | .34              | 74.38                        |
| 5   | Topeka High Patent..     | Shawnee Milling Co., Topeka, Kan.....      | 10.88         | .35      | 11.86            | .85      | .19              | 75.87                        |
| 6   | Fancy Patent.....        | Shawnee Milling Co., Topeka, Kan.....      | 10.15         | .40      | 11.47            | .86      | .18              | 76.94                        |
| 7   | Anchor.....              | Shawnee Milling Co., Topeka, Kan.....      | 12.05         | .89      | 12.45            | 1.51     | .53              | 72.57                        |
| 8   | Sea Foam.....            | Shawnee Milling Co., Topeka, Kan.....      | 11.83         | .41      | 11.97            | .85      | .20              | 74.74                        |

TABLE II.—NITROGENOUS SUBSTANCE OF FLOURS.

| No. | Sample.                 | Total Proteids..... | Gluten..... | Gliadin..... | Glutenin..... | "Edestin" and Leucosin..... | Amids as Asparagin..... |
|-----|-------------------------|---------------------|-------------|--------------|---------------|-----------------------------|-------------------------|
| 1   | Big Four.....           | 11.15               | 10.40       | 6.50         | 3.90          | .74                         | .30                     |
| 2   | Golden Rod.....         | 10.46               | 9.49        | 6.07         | 3.42          | .97                         | .32                     |
| 3   | Fortis.....             | 11.10               | 10.19       | 6.56         | 3.63          | .88                         | .32                     |
| 4   | Low Grade.....          | 10.97               | 9.88        | 6.19         | 3.69          | 1.08                        | .32                     |
| 5   | Topeka High Patent..... | 10.45               | 9.37        | 6.16         | 3.21          | 1.07                        | .32                     |
| 6   | Fancy Patent.....       | 10.12               | 9.27        | 6.04         | 3.23          | .85                         | .33                     |
| 7   | Anchor.....             | 10.90               | 9.64        | 5.93         | 3.71          | 1.25                        | .39                     |
| 8   | Sea Foam.....           | 10.56               | 9.87        | 6.38         | 3.49          | .66                         | .30                     |

TABLE III.—PERCENTAGE OF GLIADIN IN GLUTEN.

|                 |      |                         |      |
|-----------------|------|-------------------------|------|
| Big Four.....   | 62.5 | Topeka High Patent..... | 65.7 |
| Golden Rod..... | 64.0 | Fancy Patent.....       | 65.2 |
| Fortis.....     | 64.4 | Anchor.....             | 61.5 |
| Low Grade.....  | 62.7 | Sea Foam.....           | 64.6 |

It will be seen from the table that samples 1 and 5 are high patent flours; samples 2 and 6 are the next grade, while below these come samples 3 and 4, the third and fourth grades of the Page Milling Company, and sample 7, the low grade flour of the Shawnee Milling Company. Sample 8 is a soft wheat flour.

The results of the baking tests made on these flours by Prof. Henrietta W. Calvin and Miss Dow in the Department of Domestic Science would indicate that the amounts of the different pro-



teids present in a flour do not enable us to estimate its quality from the breadmaker's standpoint. The properties of the proteids, *e. g.*, their solubility, are very easily altered by slight external influences. Possibly as a result of this the presence of larger or smaller amounts of oil and ash, associated as they are so intimately with the other substances in the grain, may have a greater effect on the properties of the mixture than one would at first suppose. The solution of the problem will doubtless be the work not of months but of years.

W. E. MATHEWSON.

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#### SCHOOL—ITS INFLUENCE UPON CITIZENSHIP.

BEFORE speaking of the school and its influence upon the qualities which go to make up good citizenship, we would first mention that which we consider the greatest factor—the home life of the child. There seems to be a tendency in some parents to shift their responsibility upon others, especially the teacher. When we consider the selfishness and dishonesty of persons as portrayed by the newspaper, and knowing that many of these people are responsible for the training of a family, we cannot expect that the schools will always succeed in sending out noble young men and women. But we may be assured that this home is an exception and not the rule, and that in many homes parents are doing all they can in the proper training of the child.

Then there is the school whose noble work in character building can scarcely be over-estimated. Here the pupils form habits of neatness, order, and punctuality, and respect and obedience for those in authority, and a systematic method of performing each task, all of which is a training in character and preparation for citizenship. A properly conducted recitation affords opportunity to bring out some moral in the lesson which indirectly aids in character building.

In some schools has been introduced the plan of giving elementary instruction which has to do with the city, state and national government, for the purpose of illustrating the moral principles which underlie good citizenship. The object is not merely to impart information, but to inculcate a high standard of public duty and to show the need of placing public interest above all other gain.

The school should see that appropriate literature is furnished

for the pupils, as this is one of the best means of leading them to appreciate self-sacrificing deeds and noble thoughts.

"The mind grows with what it feeds upon." Much depends upon habits we have formed, upon established tendencies of mental action which is produced by exercise and discipline; but also upon the thought materials stored up and organized in the mind. Have an ideal—something which if given a place in the mind will become an active agent.

"In an address given by Mr. Martin is shown that true moral teaching affects conduct indirectly by the general elevation of ideals. He cited the case of Abraham Lincoln. While this great man lived and was carrying burdens such as no President ever carried before or since, men wondered how such a man could come from such a beginning. Such largeness of understanding, such loftiness of purpose, such singleness of aim, such grasp of great moral questions and questions of state—they seemed an effect without a cause; but when, after his death and under the influence of his growing fame, men began to scrutinize all the details of his early life and to find that his early associates had been, not merely the rough pioneers of the frontier settlements, but the men and women of the Bible, of Plutarch and Shakespeare, the mystery was in a large measure explained. He had been associated with the great characters of the world and grown into their likeness."

Then is it not essential that to be a successful teacher he should possess those elements of sincerity and earnestness which are the attributes to high personal character? Oftentimes the power of his own personal influence is constantly creating ideals, when he seems least to be teaching.

It is true, a school cannot fully educate the young. It can only make the right beginning. "As a twig is bent the tree is inclined." The rest depends upon the individual.

But whatever else is taught, this simple lesson should not be forgotten—that no complete failure is in store for the youth who clings to the one thought of being honorable and useful.

MAUDE M. COE.

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The glee club calls itself the "Tatarrax Male Chorus of the Kansas State Agricultural College," but its repertoire is classic and modern—nothing like Indian war whoop about it.



## SCHEDULE FOR WINTER TERM, 1905.

| Freshman.    |                                                                                            |     |                                                                                             |            |                                                                                                 |     |                                                                                                                             |              |                                                                                                  |                    |  |  |  |  |
|--------------|--------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------|--------------------|--|--|--|--|
| 1            | Rhetoric I.....                                                                            | A36 | Physics.....                                                                                | C63        | Geometry II.....                                                                                | C13 | Cooking (1)-(2), Sewing II, 4.....                                                                                          | A62          | Adv. Composition.....                                                                            | A62                |  |  |  |  |
| 2            | Physics.....                                                                               | C63 | Woodwork II, 4.....                                                                         | S26        | Adv. Composition.....                                                                           | A62 | Cooking (1)-(2), Sewing II, 4.....                                                                                          | A26          | Geometry I.....                                                                                  | A26                |  |  |  |  |
| 3            | Algebra IV.....                                                                            | A72 | Rhetoric I.....                                                                             | A36        | Cooking (1)-(2), Sewing I, 4.....                                                               | C13 | Geometry II.....                                                                                                            | S26          | Woodwork II, 4.....                                                                              | S26                |  |  |  |  |
| 4            | .....                                                                                      |     | Algebra IV.....                                                                             | A72        | Cooking (1)-(2), Sewing I, 4.....                                                               | G52 | Agriculture.....                                                                                                            | G52          | Agriculture.....                                                                                 | G52                |  |  |  |  |
| 5-6          | Physics Lab., 2, W F-S.....                                                                |     | Blacksmithing II, 4, T & T<br>El. Projection, 2.....                                        |            | Blacksmithing I, 4, W & F<br>Obj. & Geom. Draw., 4, T & T,                                      |     | Obj. & Geom Drawing, 4.....                                                                                                 |              | Free-hand Drawing, 2.....                                                                        |                    |  |  |  |  |
| Sophomore.   |                                                                                            |     |                                                                                             |            |                                                                                                 |     |                                                                                                                             |              |                                                                                                  |                    |  |  |  |  |
| AGRICULTURE. |                                                                                            |     |                                                                                             |            | GENERAL SCIENCE.                                                                                |     |                                                                                                                             | ENGINEERING. |                                                                                                  |                    |  |  |  |  |
| 1            | Physiology.....                                                                            | F60 | .....                                                                                       |            | Entomology.....                                                                                 | F28 | German.....                                                                                                                 | F59          | Chemistry I.....                                                                                 | C26                |  |  |  |  |
| 2            | Breeds of Stock, 2½(1). G54<br>Pub. Speaking II, 2½(2), A51                                |     | Horticulture.....<br>German.....                                                            | H26<br>F59 | Pub. Speaking I, 2½(1), A51                                                                     |     | Chemistry IV, 2½.....                                                                                                       | C27          | Shop Lectures I, W.....                                                                          |                    |  |  |  |  |
| 3            | Chemistry II.....                                                                          | C27 | German.....<br>Horticulture.....                                                            | F59<br>H26 | Chemistry II.....                                                                               | C27 | Kinematics.....                                                                                                             | G28          | .....                                                                                            |                    |  |  |  |  |
| 4            | .....                                                                                      |     | Chemistry II.....                                                                           | C27        | German.....                                                                                     | F59 | Algebra IV.....                                                                                                             | A72          | Chemistry I.....                                                                                 | C26                |  |  |  |  |
| 5-6          | Chemistry II Lab. 2, Tu.....<br>Physiology Lab. 2, Th.....<br>Stock Judging, 4, W & F..... |     | Dressmaking, 6, T T & S.....<br>Chemistry II Lab., 2, W-F.....<br>Floriculture, 2, W-F..... |            | Chemistry II Lab., 2, Th.....<br>Entomology Lab., 2, W-F.....<br>Projection Drawing, 2, Tu..... |     | Chem. IV Lab., 4, T T-W F.....<br>Des. Geom., 4, W F-Th S.....<br>Foundry 2, S-Tu.....                                      |              | Chem. I Lab., 2, W-F.....                                                                        |                    |  |  |  |  |
| Junior.      |                                                                                            |     |                                                                                             |            |                                                                                                 |     |                                                                                                                             |              |                                                                                                  |                    |  |  |  |  |
| .....        |                                                                                            |     |                                                                                             |            | MECH. ENGINEERING.                                                                              |     |                                                                                                                             |              |                                                                                                  | ELEC. ENGINEERING. |  |  |  |  |
| 1            | Rhetoric II.....                                                                           | A60 | .....                                                                                       |            | Civics.....                                                                                     | F56 | Integral Calculus.....                                                                                                      | A72          | Physics II.....                                                                                  | C60                |  |  |  |  |
| 2            | Civics.....                                                                                |     | Geology.....                                                                                | F28        | Physics III.....                                                                                | C62 | Physics II.....                                                                                                             | C60          | Integral Calculus.....                                                                           | A72                |  |  |  |  |
| 3            | Hg. Farm Ani., 2½(1). V52<br>Farm Arch., 2½(2). A57                                        |     | Home Nursing.....                                                                           | K32        | Phys. III, Lab., 4, W & F.....<br>Bacteriology Lab., 4, T & T.....                              |     | European History.....                                                                                                       | F56          | European History.....                                                                            | F56                |  |  |  |  |
| 4            | .....                                                                                      |     | European History.....                                                                       | F56        | Phys III Lab., 4, W & F.....<br>Bacteriology Lab., 4, T & T.....                                |     | .....                                                                                                                       |              | .....                                                                                            |                    |  |  |  |  |
| 5-6          | Agri Chem. Lab. 6, T, T & S<br>Agricultural Mech., 2, W.....                               |     | Dom. Sci. II, 6, W & F T & T.....                                                           |            | Bacteriology 2½, (1)..... F60<br>Industrial, 4.....                                             |     | Physics II, Lab., 4, T & T<br>Mech. Draw. III, 4, W & F<br>Machine Shop II, 2, S.....                                       |              | Physics II, Lab. 4, W & F<br>Mech. Draw. III, 4, Th & S<br>Machine Shop II, 2, Tu.....           |                    |  |  |  |  |
| Senior.      |                                                                                            |     |                                                                                             |            |                                                                                                 |     |                                                                                                                             |              |                                                                                                  |                    |  |  |  |  |
| 1            | Economics.....                                                                             | A51 | Psychology.....                                                                             | A33        | Plant Morphology.....                                                                           | F53 | Hydraulics.....                                                                                                             | G28          | Hydraulics.....                                                                                  | G28                |  |  |  |  |
| 2            | Elective.....                                                                              |     | Elective.....                                                                               |            | Phil. Education, Forestry.....<br>Chemistry, Soil Physics.....<br>Entomology, Bacteriology..... |     | Applied Mechanics I.....                                                                                                    | G28          | Applied Mechanics I.....                                                                         | G28                |  |  |  |  |
| 3            | Physics IV.....                                                                            | C62 | Psychology.....                                                                             | A33        | Physics IV.....                                                                                 | C62 | Thermodynamics II.....                                                                                                      |              | D. C. Machine II.....                                                                            | C60                |  |  |  |  |
| 4            | English Literature.....                                                                    | A60 | English Literature II, A60                                                                  |            | Plant Morph. Lab., 4, W & F<br>Physics IV Lab., 2, Tu.....<br>Industrial, 4, Th. & S.....       |     | Shop Lecture VI, 1, Tu.....<br>Engineering Lab. II, 4, Th & F<br>Mechanical Draw., V, 1, 2, Tu<br>Machine Shop V, 2, W..... |              | D. C. Mech. Lab., 4, T & F-W & S<br>Eng. Lab. I, 4, W & S, T & F<br>Machine Shop III, 2, Th..... |                    |  |  |  |  |
| 5-6          | Physics IV, Lab., 2.....                                                                   | Th  | Dietetics, 2½, (1)-(2).....                                                                 | K32        | Diet. Lab., 6, T & T-W & F.....                                                                 |     |                                                                                                                             |              |                                                                                                  |                    |  |  |  |  |

|           |                             |      |                      |      |
|-----------|-----------------------------|------|----------------------|------|
| Freshman. |                             |      |                      |      |
| 1         | Woodwork I, 4               | S 26 | Geometry I           | A 63 |
| 2         | Agriculture                 | G 52 | Classics             | A 32 |
| 3         | Classics                    | A 62 | Botany I             | F 53 |
| 4         | Geometry I                  | A 63 | Woodwork I, 4        | S 26 |
| 5-6       | Free-hand Drawing, 2        |      | Free-hand Drawing, 2 |      |
|           | Composition                 | K 32 | Algebra II           | A 26 |
|           | Algebra III                 | A 63 | Composition          | A 36 |
|           | Medieval History            | A 46 | Physical Geography   | W 33 |
|           | Physical Geography II, F 28 |      | Medieval History     | A 46 |
|           |                             |      |                      |      |

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|-----------|-----------------|------|-----------------------------|------|
| Freshman. |                 |      |                             |      |
| 1         | Ancient History | A 46 | Reading                     | A 32 |
| 2         | Algebra II      | C 13 | Physical Geography II, W 33 |      |
| 3         | Composition     | A 32 |                             |      |
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|           |                 |      | Algebra I                   | D 31 |
|           |                 |      | Advanced Grammar            | K 32 |
|           |                 |      | Bookkeeping                 | A 71 |
|           |                 |      | Physical Geography I, W 33  |      |
|           |                 |      |                             |      |
|           |                 |      | Physical Geography I        | W 33 |
|           |                 |      | Bookkeeping                 | A 71 |
|           |                 |      | Advanced Grammar            | F 60 |
|           |                 |      | Algebra I                   | D 31 |
|           |                 |      | Algebra I                   | A 26 |
|           |                 |      | Advanced Grammar            | A 33 |

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|--------------|-----------------|------|-----------------|------|
| Prep.        |                 |      |                 |      |
| PREPARATORY. |                 |      |                 |      |
| 5            | U. S. History A | A 26 | El. Physiology  | F 53 |
| 6            | El. Physiology  | F 60 | Grammar A       | W 33 |
| 7            | Grammar A       | W 33 | Arithmetic A    | A 62 |
| 8            | Arithmetic A    | A 62 | U. S. History A | A 26 |
|              |                 |      |                 |      |
|              |                 |      | Grammar B       | W 33 |
|              |                 |      | Arithmetic B    | A 62 |
|              |                 |      | U. S. History B | A 26 |
|              |                 |      | Geography       | A 63 |
|              |                 |      | Grammar B       | W 33 |

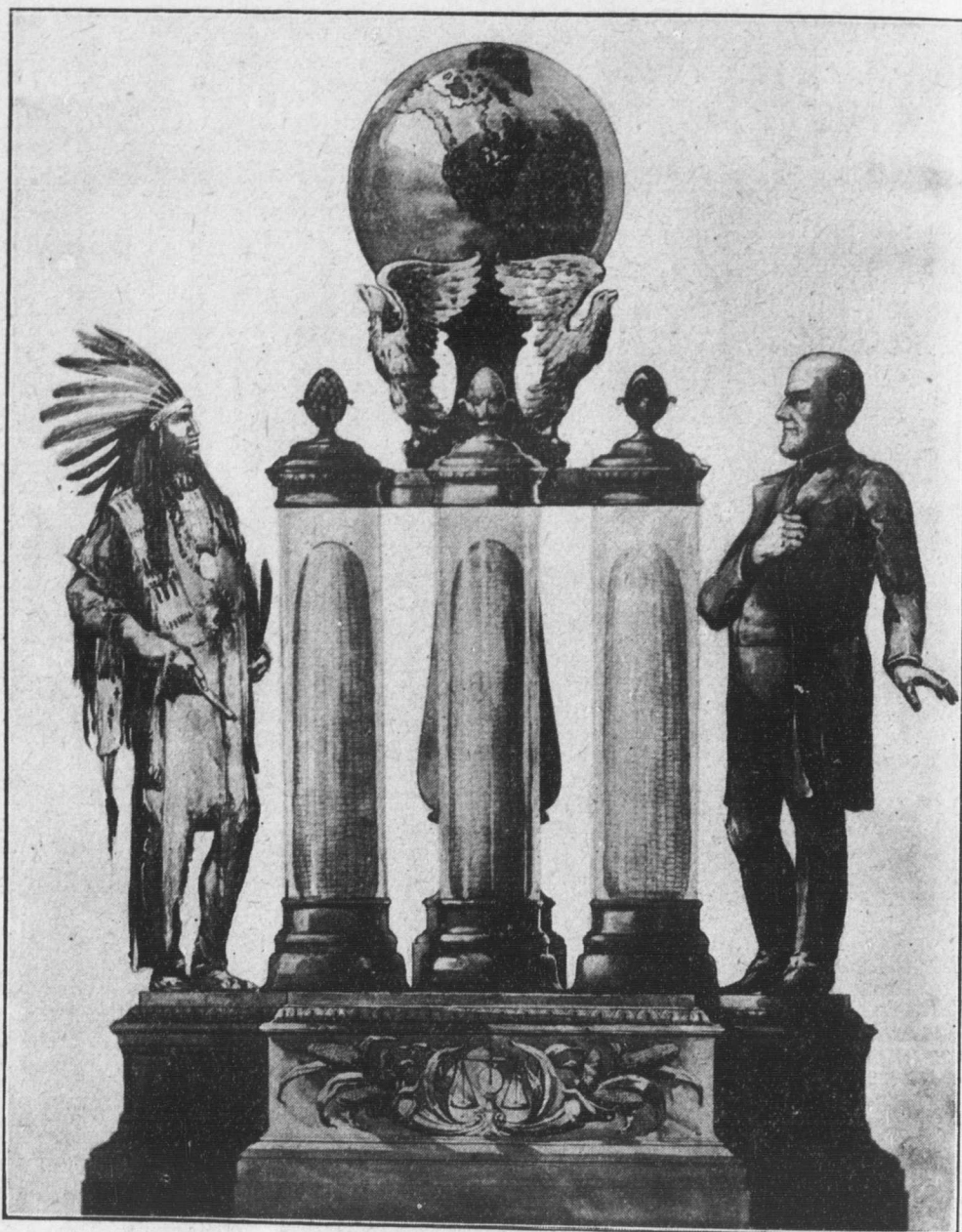
|                        |                              |             |                             |             |
|------------------------|------------------------------|-------------|-----------------------------|-------------|
| Short Courses.         |                              |             |                             |             |
| FARMERS' SHORT COURSE. |                              |             |                             |             |
| DAIRY COURSE.          |                              | FARM DAIRY. |                             | First Term. |
| 1                      | Feeds & Feeding              | G 53        | Breeds of Stock             | G 54        |
| 2                      | Dairying                     | D 31        | Dairying                    | D 31        |
| 3                      | Dis Dairy. An, 2½, (2), V 52 |             | Crop Production             | G 56        |
| 4                      | But. & Chs. Making           | D 31        | Feeds & Feeding             | G 53        |
| 5-6                    | Dairy Laboratory, 10 M.      |             | Breeds of Stock             | G 54        |
|                        | Boiler & Engine, (1)-(2)     |             | Breeds of Stock             | H 26        |
|                        |                              |             | Carpentry, T & T, W & F     |             |
|                        |                              |             | Stock Judging, W & F, T & T |             |

(1) Every other day beginning January 3.  
(2) Every other day beginning January 4.



## THE COOK TROPHY.

We present in this issue half-tones of the Cook trophy and of Mr. A. E. Cook, who offered the trophy to the College whose students were most efficient in the judging of corn. Mr. Cook is an



enterprising farmer and stock raiser of Odebolt, Iowa, and is proprietor of the Brookmont farm. This farm of 7350 acres was purchased thirty-eight years ago by Chas. Willard Cook, father of A. E. Cook, at \$2.00 per acre. It lies in the most valuable agricultural section of Iowa, on the divide between the Mississippi and Missouri rivers. This immense farm is divided into smaller farms of one-half section, each of which has its own foreman and

workmen. It requires a drive of twenty-seven miles to visit these various sub-farms, so that the entire farm is managed from Mr. Cook's office mainly by the use of the telephone.

Mr. Cook has conducted several feeding experiments in conjunction with the Iowa State College, and because of the large number of animals included in

these tests the experiments are considered of great value. Mr.

Cook is also interested in crop production, and is conducting experiments to improve his corn,

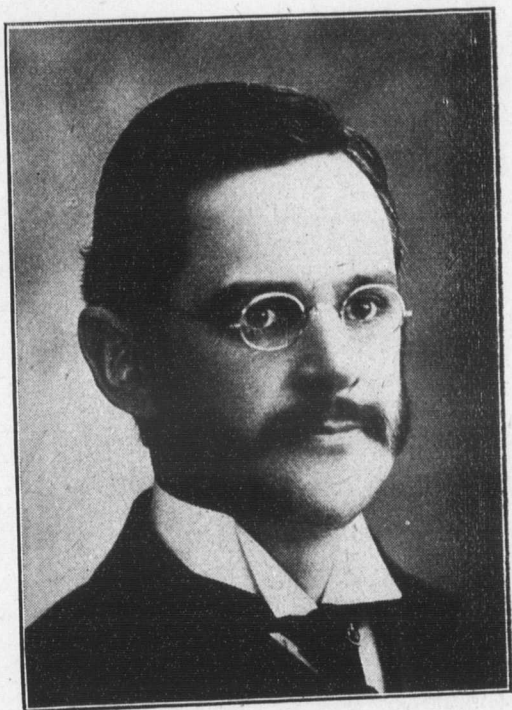
small grains and other crops, and to discover better methods of farming, as to handling of the

soil, rotation of crops, etc. Prof. H. M. Cottrell, formerly of this

College, has charge of this branch of the work. Mr. Cook has

shown his interest in the improvement of corn by donating the beautiful trophy, as shown

above, as an encouragement in this work. It is fortunate that we have such men as Mr. Cook who are public spirited and foresighted enough to help in this movement. The day is already here when the farmer must adopt the most modern methods in his farming operations or step aside for those who do.



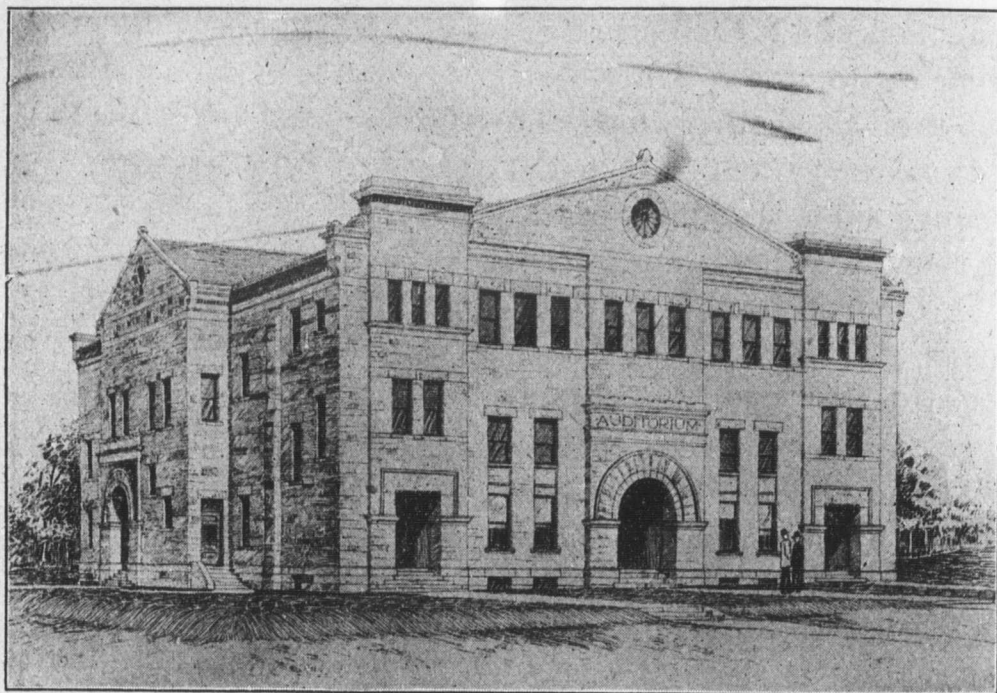
#### DEDICATION OF THE AUDITORIUM.

Last Wednesday was a red-letter day for the Agricultural College. The weather was cold and there were light snow flurries, but in spite of these unfavorable conditions the dedication exercises of the Auditorium were well attended.

The official program in the afternoon was in charge of Capt. McDowell, the President of the Board of Regents. After a selection by the College Orchestra and prayer by Rev. O. B. Thurston, of Manhattan, Regent Fairchild gave the address of welcome in hearty, well-chosen words. He spoke of the characteristic work of the Agricultural College, its peculiar mental atmosphere, and the work of the alumni of the institution, thanked the people of



Kansas and the legislature in the name of the College for the magnificent gift of the finest aula in the West, and expressed the hope that the next legislature would do equally well. President Nichols gave an extended historic sketch of the College from its inception, and spoke at length of the purpose of the institution. He reviewed the growth and work of the Experiment Station, and closed with comparative statistics of attendance, teaching force, means and expenses of this College and the colleges of Iowa, Indiana, North



and South Dakota, Michigan, and Colorado, showing that Kansas teaches her large number of students at an expense to the State of one-half to two-thirds of that of her sister states. We hope to be able to publish a part of the very interesting paper in the next number of the INDUSTRIALIST.

The next speaker, President Storms, of the Iowa Agricultural College, gave the dedicatory address. The President has a splendid voice and speaks in a pleasing manner. He said he was delighted to know that Kansas had so generously provided this fine building, that Iowa had nothing so good, and that the Kansas State Agricultural College was known among its sister institutions as a model school of practical science. He said that correct industrial growth of a nation meant the development of all her resources. With such a people individual initiative abounds, and human happiness is increased as by no other means. Schools are

not ends but means, and industrialism is the end aimed at—it develops equality and a sense of justice and fairness. He said he had no use for aristocracy, not even of an aristocracy of intellect. Science, he said, was the chief factor of progress; it produces the means of existence and multiplies time to do other things. The invention of agricultural machinery has multiplied the farmer's ability to raise crops by nearly ten. Scientific education also produces moral results.

After a solo by Professor Valley, Chancellor Strong, of the Kansas State University, was introduced, who said he brought the College the greeting of the State University. He insisted that the two sister institutions were not rivals in any sense; that they had different work to do and were doing it in a different way. He said that he could not congratulate the State to the fact that the College educated its students at an annual expense of only \$99 per student when other states were willing to spend \$150. It should not be a question for the legislature to see how cheap educational work could be done; rather how much could be spent to advantage. President Wilkinson, of the State Normal School, was next introduced, but owing to the lateness of the hour he declined to address the audience.

The afternoon exercises closed with music by the cadet band. The musical program of the afternoon and evening was of high order, under the training and leadership of Professor Valley and his assistants, Mr. R. H. Brown and Miss Cecilia Augspurger. The rendered selections were highly appreciated and gave evidence of careful and energetic training. The INDUSTRIALIST feels like saying that the dedicatory services of the new Auditorium were a proud occasion for the friends and patrons of the Kansas State Agricultural College.

For nearly a year President Nichols has received letters addressed to the "Manhattin Colledge," by a certain Thomas Durrah, of Marion, Ohio. The spelling and writing of these scientific missives are such that no one has been able to read them, or even learn what thoughts, if any, the writer desires to convey. A letter received last week consists of twenty-six closely written pages. Copious notes appear on the margins. The area of these pages is about twenty square feet. A note to the Marion authorities brought a reply stating that Durrah is harmless and spends his time writing weighty epistles to various educational institutions.



## THE INDUSTRIALIST.

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Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief  
PROF. J. D. WALTERS.....Local Editor  
PROF. J. T. WILLARD.....Alumni Editor

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## LOCAL NOTES.

The Entomological Department has purchased three new compound microscopes.

Prof. J. T. Willard will read a paper before the Kansas Academy of Science, entitled "The Need of Investigations in Human Nutrition." The academy meets at Topeka, December 29 to 31.

Last Thursday morning Assistant R. H. Brown, of the Music Department, received the sad news from Leavenworth of the death of his mother. Mrs. A. B. Brown lived in Manhattan for over fifteen years and will be remembered by her many friends as a kind neighbor, a devoted mother and wife, and a perfect lady.

A special teachers' and students' rate has been granted to the College, by the Union Pacific and Rock Island railroads, of one fare plus fifty cents for the round trip, except where one and one-third fare is less. This rate will be good next Friday by presenting certificate signed by President Nichols. The holiday rate, effective on Saturday, will be the same. The special rate ticket will be good for return on or before January 3.

Professors Albert Dickens and Henrietta Calvin entertained the domestic science short course class at the home of the former, on the evening of December 10. The class is composed of twenty-one girls, nineteen of whom were present. Besides the class, the guests were President and Mrs. E. R. Nichols, Miss Clara Pancake, assistant in Domestic Science Department, Miss Maude Coe and Miss Ina Cowles, assistants in domestic art; M. F. Ahearn, instructor in floriculture, and R. E. Eastman, assistant horticulturist.

Professor TenEyck and Assistant Shoemith are making arrangements for a grain-judging contest, to take place near the end of the winter term, between the different classes. One of the friends of the College has offered to donate a trophy, and the names of the winning team each year will be engraved upon it. Individual prizes will be given to those most efficient in judging. These prizes are modern farm implements and have been donated by the different implement manufacturers. Arrangements are also being made for a corn-growing contest, to be participated in by farmers' boys over the State, and open to any College student or graduate at home on the farm. A list of prizes for this has been arranged.—*Students' Herald*.

Regent and Mrs. James McDowell, assisted by Mrs. Burrow and Mrs. Kelly, of Topeka, and Mr. James McDowell, Jr., of Smith Center, gave a reception to the Board, the Faculty and assistants, and to invited guests, on Thursday night, in the parlors of Hotel Gillett. The function was a most enjoyable one and was participated in by over a hundred persons. Light refreshments were served.

The Board of Regents was in session on Tuesday, Wednesday and Thursday of last week. All members were present and the meeting was a busy one. Among the items considered, the following may be of general interest: It was voted to continue the summer school in domestic science and domestic art for another year. The city of Manhattan was given the privilege of quarrying rock in the College quarry for the road to be macadamized from the business street to the College gate. One hundred fifty dollars annual maintenance was voted to the College Y. M. C. A., and seventy-five dollars to the College Y. W. C. A. It was voted to give the second term of the domestic science short course this winter term. The Auditorium was accepted from the contractor, Henry Bennett, and arrangements were made for the final settlement. Pres. E. R. Nichols was authorized to purchase three new pianos for the Music Department, if available funds can be found.

The last number of the *Student's Herald* contains a well-written article on the football situation, from which the following pertinent paragraph is excerpted: "In the editor's opinion, football is overdone in some American colleges to-day. The colleges which are most famous for their football are accused, and in most cases rightly, too, of being the most lax in requiring work of the football players. The fact is indisputable that it is impossible for a man who is little short of a prodigy to give all of his time to football and yet keep up a heavy assignment, especially in colleges which take men out of the grade or district school and make Bachelors of Science of them in four years. Why is it that West Point, which contains some of the smartest and best developed young men of the United States, does not hold her own with the other eastern colleges? The reason is that men go to West Point to study and not to play football. West Point was established to train soldiers and not football players. After all what are athletics for?"

Dr. N. S. Mayo, director of the Cuban Bureau of Animal Industry, and formerly State Veterinarian of Kansas and professor of veterinary science at the Kansas Agricultural College, has lately visited this country for the purpose of buying a number of herds of pure-bred cattle of various breeds as a foundation for what it is hoped will be one of the most prominent industries on the Island. In company with his newly appointed assistant, Mr. C. G. Elling, a graduate of the Kansas Agricultural College, Doctor Mayo made the rounds among the breeders and made some very satisfactory purchases. Among them were a bull and three heifers from the Hereford herd of C. W. Armour, of Kansas City; a bull and three



heifers from the Elder Lawn Herd of Shorthorns of T. K. Tomson & Sons, of Dover; a bull and three heifers from the Angus herd of Parker Parrish & Miller, Hudson; and a few Jersey heifers from Missouri. All of these animals are under two years and they are now in the Kansas City Stock Yards undergoing a treatment to immunize them against splenic fever before they are shipped. If the Republic of Cuba ever becomes noted as a grower of pure-bred cattle, Kansas will claim the credit of having started her breeders in business.—*Kansas Farmer*.

C. E. Dietz, who coached the College football team last year, is the hero of a romance, according to the following story taken from the Chicago American: "A romance which began on a football field three years ago culminated Wednesday evening, December 7, in the wedding of Miss Ruberta Louise Sleight, a belle of Moline, Ill., and Cyrus Edgar Dietz, formerly captain of Northwestern University's eleven. Dietz was captain of the Purple football eleven in 1901. He played right guard, and at the end of the season was selected a member of the All-Western eleven for his excellent playing. During that year Miss Sleight, who was visiting friends at Evanston, attended a football game at Sheppard field. Dietz distinguished himself by his playing, and at the reception given to the football players a few days later Miss Sleight and Mr. Dietz met. They at once became warm friends. Friendship turned to love, with the result that the announcement of their engagement was made a short time ago. Mr. Dietz entered the Northwestern law school and after completing the course was admitted to the bar and is now practicing law. The wedding took place at the Manufacturers' hotel, at Moline, and was followed by a large reception."

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#### ALUMNI AND FORMER STUDENTS.

Carl G. Elling, '04, who has been dangerously ill with pneumonia in Kansas City, is improving and hopes to be out again soon.

A telegram recently received by Professor Dickens announces the appointment of Fred G. Kimball, '87, as deputy United States marshal at St. Michaels, Alaska.

An event of much interest to many occurred on Wednesday evening, December 14, 1904, near Blue Rapids when Miss Lydia A. McKee and Earl C. Butterfield, '98, were married at the home of the bride's parents. Miss Julia McKee, sister of the bride, played the wedding march and her brother, Roland McKee, '00, sang "All for You." Only the intimate friends and relatives were present. After visiting in Marshall county a few days Mr. and Mrs. Butterfield will come to Manhattan for a short visit with Mr. Butterfield's parents, when they will go to Washington, D. C., their future home. The best wishes of a host of friends follow these young people.

Historical Society

VOL. 31

NO. 14

# THE INDUSTRIALIST

ISSUED WEEKLY BY

**KANSAS STATE . . . .  
AGRICULTURAL COLLEGE**

♦ ♦ ♦

*Editor-in-Chief, - PRES. E. R. NICHOLS*  
*Local Editor, - - PROF. J. D. WALTERS*  
*Alumni Editor, - PROF. J. T. WILLARD*

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| Miss Maud Coe, B.S. (K. S. A. C.).....                                                    | Assistant in Domestic Art                   |
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| Theo. H. Scheffer, A.M. (Cornell University).....                                         | Assistant in Zoölogy                        |
| Miss Kate Tinkey.....                                                                     | Assistant Librarian                         |
| Earl N. Rodell, B.S. (K. S. A. C.).....                                                   | Assistant in Printing                       |
| Miss Caroline Hopps, Ph.B. (University of Chicago).....                                   | Assistant in English                        |
| Miss Helen Thompson, B.S. (K. S. A. C.).....                                              | Assistant in Preparatory Department         |
| Miss Ella Weeks, A.B. (U. of K.).....                                                     | Assistant in Drawing                        |
| Miss Flora Rose (Framingham Mass. Normal).....                                            | Assistant in Domestic Science               |
| Miss Clara Pancake, B.S. (K. S. A. C.).....                                               | Assistant in Domestic Science               |
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# THE INDUSTRIALIST.

VOL. 31.

MANHATTAN, KAN., DECEMBER 24, 1904.

No. 14

## HISTORY, AIMS AND NEEDS OF THE KANSAS STATE AGRICULTURAL COLLEGE.\*

THOSE of us who have been educated within the last thirty or forty years can hardly realize the change in educational methods and matter brought about by the establishment of colleges for the benefit of agriculture and mechanic arts. Forty years ago there were few, if any, institutions outside of West Point and Annapolis where young men could obtain instruction in civil engineering, while mechanical and mining engineering were taught by the apprenticeship methods only, and electrical engineering was unknown. Physics was almost an unknown science, and the condition of the other natural and physical sciences was little better.

In December, 1855, Mr. Morrill, of Vermont, began one of the longest and most fruitful of any legislative career. Morrill served for twelve years in the House and thirty-two in the Senate—forty-four years of remarkable development in this country.

To Senator Morrill more than any one else we are indebted for the colleges of agriculture and mechanic arts. He was among the very first to recognize the complaint of the industrial classes that higher education, as it then existed, did not contribute to their welfare and betterment. They felt that education was for the professional classes and for people of leisure rather than the laboring classes.

The bill endowing the agricultural and mechanical colleges was introduced by Morrill in 1857, passed the House in April, 1858, by the narrow margin of 105 to 100 votes, and finally passed the Senate in February, 1859, and was vetoed by President Buchanan. In 1861 the bill was again introduced, and after a stormy passage was finally signed by President Lincoln the 2nd day of July, 1862.

\*Excerpts from an address, by President E. R. Nichols, read at the dedication of the Auditorium, December, 14, 1904.



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It was entitled: "An Act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and mechanic arts." Section 1 apportions to each state and territory thirty thousand acres of public lands for each senator and representative in Congress. Section 4 reads as follows: "And be it further enacted, that all moneys derived from the sale of the lands aforesaid by the states to which the lands are apportioned, and from the sales of land scrip hereinbefore provided, shall be invested in stocks of the United States or of the state, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks; and that the money so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished (except so far as may be provided in section 6 of this act), and the interest of which shall be inviolably appropriated by each state which may take and claim the benefit of this act to the endowment, support, and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislature of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

The word "practical" was the key-note. Everything, including the classics, could be taught, but everything that was taught was to be made practical—applicable to every-day affairs of life. The sciences were to be taught, not for the sake of pure science, but the applications that could be made of them. This distinction marks clearly the difference between the state universities and the agricultural colleges. In the universities the sciences are taught for the sake of pure science; in the agricultural colleges the sciences are taught on account of their application to agriculture, engineering, domestic science, etc.

Senator Morrill's purpose was to bring all the sciences into direct relation and aid to modern industries. The young man who graduated from these colleges was not only to know and do, but he was to know what to do and why. Head and hand, muscle and mind, were to work together.

Public education at state expense is for the benefit of the state rather than the individual. Unless the state receives some



benefit in the way of men and women better trained to meet the needs of citizenship, persons less liable to become charges on the state either as prisoners or paupers, state education would be a failure. The agricultural colleges should educate men to be farmers and they should also educate farmers to be men.

The joint resolution of the legislature accepting the grant was approved by Governor Carney, February 3, 1863. The grant gave Kansas 90,000 acres, but as a portion of the selected tracts supposed to be within railroad limits counted double, the college received but 82,313.52 acres. This land has all been sold and results in a permanent endowment of about \$500,000.

Senator Morrill was active in helping the Hatch or Experiment Station Bill pass Congress in 1887, which gives to each state and territory \$15,000 annually "to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and values of grasses and forage plants; the composition and digestibility of the different kinds of foods for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches and experiments bearing directly on the agricultural interests of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states or territories."

The experiment stations were the direct outgrowth of the agricultural college. The study of the sciences for the sake of agriculture, and the mechanic arts naturally leads to the laboratory and the experimental methods. It was but a step from the experimental in the pure sciences to the experimental in the applied. Learn to do by doing.

The last work of Senator Morrill in behalf of the agricultural colleges was the College Aid Bill. This bill was approved by President Harrison, August 30, 1890, the purposes of which are set forth in the title of the bill: "An act to apply a portion of the

proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts established under the provisions of An Act of Congress, approved July 2, 1862." Section 1 reads in part as follows: "There shall be, and hereby is, annually appropriated . . . the sum of \$15,000 for the year ending June 30, 1890, and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of \$1000 over the preceding year, and the annual amount to be paid thereafter to each state and territory shall be \$25,000, to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic sciences, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Early in 1857 an association was formed to build a college in or near Manhattan, to be under the control of the M. E. Church of Kansas, and to be called "Bluemont Central College." The charter was approved February 9, 1858. It provided for the establishment of a classical college, and also contained the following provision: "The said association shall have power and authority to establish, in addition to the literary department of arts and sciences, an agricultural department, with separate professors, to test soils, experiment in the raising of crops, the cultivation of trees, etc., upon a farm set apart for the purpose, so as to bring out to the utmost practical results the agricultural advantages of Kansas, especially the capabilities of the high prairie lands."

The leading members of the association were: Rev. Joseph Denison, D. D., afterwards President of the college; Isaac T. Goodnow, state superintendent of public instruction 1862-'66; S. C. Pomeroy, afterwards United States senator. A site of one hundred acres northwest of the town was selected and the title secured by special act of Congress introduced by Senator Pomeroy. The corner-stone was laid May 10, 1859. The college had a hard time to live and when the act of July 2, 1862, was passed, and accepted by the legislature, the trustees offered it at once to the state. The offer consisted of one hundred acres of land, a plain three-story stone building, 44 x 60 feet, several hundred volumes, and some illustrative apparatus, valued at about \$25,000, was accepted.

Doctor Denison was President of the college until 1873. At the end of his term there was a preparatory course of two years and



four four-year courses,—Agriculture, Mechanic Arts, Military Science, and Literary. The institution grew slowly. The newness of the State, the civil war, the western location of Manhattan, the inadequacy of means, the little understanding of industrial education, all conspired to this end. Up to 1873 only fifteen students had graduated. The last catalogue issued by President Denison lists two hundred two students and gives a Faculty of eight professors and four assistants.

To Rev. John A. Anderson, President from 1873-'79, belongs the credit of making the College agricultural and industrial in its tendencies. In September, 1873, the Board of Regents adopted the following resolution for the purpose of defining their policy and as a guide to the Faculty in preparing a new curriculum:

“Resolved, That the object of this institution is to impart a liberal and practical education to those who desire to qualify themselves for the actual practice of agriculture, the mechanic trades, or industrial arts. Prominence shall be given agriculture and these arts in the proportion that they are severally followed in the State of Kansas. Prominence shall be given to the several branches of learning which relate to agriculture and the mechanic arts, according to the directness and value of their relation.”

Three six-year courses were adopted—Farmer's, Mechanic's, and Woman's. In 1877 the Farmer's and Mechanic's courses were united, and that with the Woman's course reduced to four years. The number of graduates during President Anderson's term was thirty-four, and the enrolment at the close of his term was two hundred seven.

Dr. George T. Fairchild was President from 1879-'97. The Farmer's and Woman's courses were merged into one course, differing in a few studies and in the industrial work as sex required. In the winter term of the second year young men had agriculture and young women household economy, and in the fall term of the fourth year young men had agriculture and young women special hygiene. As under President Anderson, each student was required to take an industrial one hour each day or its equivalent. This course continued for eighteen years with but few changes, and these changes in the entrance requirements mainly. During President Fairchild's term there were five hundred twenty-nine graduates and the enrolment the last year was seven hundred thirty-four.

During Pres. Thomas E. Will's administration (1897-99) four courses of study were offered: Agriculture, Mechanical Engineering, General Science, and Domestic Science. A twelve weeks' course in dairying was established and an apprentice course of forty weeks in the shops and printing-office. The number of graduates during the two years was one hundred twenty-three, and the number of students the last year eight hundred seventy.

At the beginning of the present administration (1899) the four long courses of study were thoroughly revised and a course in electrical engineering added. These courses were all made alike the first year except such differences as sex requires. A term in agriculture was put in the first year so that each young man might have one term of scientific agriculture before selecting a course. The increase in the number of young men taking the agriculture course fully confirms the wisdom of this arrangement. A short course in domestic science and a short course in agriculture were introduced. The length of each of these is two terms of twelve weeks, the domestic science being given in the fall terms, and the agriculture in the winter. The apprentice courses were increased to eighty weeks each, and an apprentice course in dairying added. This year a four year course in Architecture has been added. The enrolment for the last six years, together with selection of courses, is as follows:

| YEAR           | Total. | Men.         |           |              |           |                  |           | Women.           |           |                   |           |
|----------------|--------|--------------|-----------|--------------|-----------|------------------|-----------|------------------|-----------|-------------------|-----------|
|                |        | Agriculture. |           | Engineering. |           | General science. |           | General science. |           | Domestic science. |           |
|                |        | No.          | Per cent. | No.          | Per cent. | No.              | Per cent. | No.              | Per cent. | No.               | Per cent. |
| 1898-'99.....  | 870    | 127          | 22.1      | 160          | 27.8      | 287              | 50.1      | 193              | 65.4      | 103               | 34.6      |
| 1899-1900..... | 1094   | 257          | 34.1      | 201          | 26.7      | 296              | 39.1      | 170              | 50.0      | 170               | 50.0      |
| 1900-'01.....  | 1321   | 378          | 39.6      | 293          | 30.7      | 284              | 29.7      | 109              | 29.8      | 257               | 70.2      |
| 1901-'02.....  | 1396   | 407          | 40.0      | 367          | 36.1      | 243              | 23.9      | 83               | 21.9      | 296               | 78.1      |
| 1902-'03.....  | 1574   | 457          | 41.2      | 420          | 37.9      | 232              | 20.9      | 82               | 17.6      | 383               | 82.4      |
| 1903-'04.....  | 1605   | 492          | 43.9      | 398          | 35.5      | 232              | 20.6      | 40               | 8.3       | 443               | 91.7      |

These colleges have fully demonstrated the need and value of education for the industrial classes. The farmer needs an education, has always needed an education, but needs it more to-day than ever before, A successful farmer is one who leaves the soil



in as good, or better, condition than he found it. Measured by this definition, there are very few, if any, successful farmers.

Yes, farmers have made money, are making money to-day—most of them in spite of themselves. Nature is very lavish with her gifts. But the average yield of wheat and corn in bushels per acre in this country is ridiculously small—not more than one-half, or one-third what it should be, and what it will be in a few years hence.

The farmer needs to know how to raise crops—paying crops—not one year, not ten years, but continuously. He must know how to keep up the fertility of the soil. The farmer is as interested in getting a fair price for the one blade of grass as he is in making two blades grow where one grew before; hence he should be an economist.

Fifty years ago machines were of the simplest kinds—the scythe, the sickle, and the flail. To-day we have the mowing machine, the self-binder, and the thrashing-machine, besides many others, more or less complicated. The farmer needs to be a mechanic.

The farmer must market his product, must use the public highways. He needs to know how to make and maintain good roads. He needs a house for his family, and barns and sheds for his grain and stock. He should know rural engineering and architecture. There is frequently less thought put on the location and construction of the farm home than anything else about the farm. The farm home contains very few of the conveniences usually found in the city home; not because they could not be had, not because they are expensive, but because farmers and farmers' wives have not learned how to live comfortably or do not consider it necessary.

We are teaching young men and women to be farmers, or mechanics, or home makers; that is, we are giving a liberal and practical education to the industrial classes in the several pursuits and professions in life. But I think the College goes farther. It teaches not only how to work, but it teaches respect for work, and every one should work. If a man does not wish to work in a coal-mine, let him come up and work on top of the earth. If he does not wish to work out-of-doors, let him work in a factory. If he does not wish to work with his hands, let him get a place where he can work with his brains; but work he should in some way. I would go farther, and say a man should work physically for a few years

and work hard. It will give him a good constitution, it will give him a more practical view of life, it will give him a broader sympathy with his fellow-men.

This College has enrolled over eleven thousand students, one thousand twenty-two of whom have been graduated. Eighty-five per cent of the male graduates are in agricultural, mechanical, or military occupations. Certainly a good showing. It is probable that even a larger per cent of the undergraduates are following industrial occupations.

Last year ninety-three counties were represented. Riley county of course, comes first, then in order Shawnee fifty-seven, Marshall fifty, Pottawatomie forty, Brown and McPherson each thirty-three, Cowley thirty-two, Morris twenty-nine, Clay, Franklin, Jewell, Sedgwick and Smith each twenty-seven, Mitchell and Sumner each twenty-six, Jackson and Washington each twenty-five, etc.

I have compared the support Kansas has given her Agricultural College with that given other agricultural colleges in other states. I have selected these states as similar to Kansas in having the agricultural colleges separate from the universities, and have found the following comparative figures, taken from the government reports:

| STATE AGRICULTURAL COLLEGES. | Average for seven years—1896-1903. |          |                      |                   | 1903.               |                        |
|------------------------------|------------------------------------|----------|----------------------|-------------------|---------------------|------------------------|
|                              | Enrolment.                         | Faculty. | Income. <sup>1</sup> | Cost per student. | Volumes in library. | Property. <sup>2</sup> |
| Kansas.....                  | 1103                               | 50       | \$108,786            | \$ 99             | 27,710              | \$1,097,033            |
| Iowa.....                    | 1042                               | 65       | 159,292              | 153               | 20,000              | 1,563,891              |
| Indiana.....                 | 955                                | 70       | 158,699              | 166               | 15,400              | 1,093,250              |
| Michigan.....                | 599                                | 48       | 166,427              | 278               | 24,003              | 1,735,224              |
| South Dakota.....            | 454                                | 26       | 65,022               | 143               | 17,350              | 1,051,685              |
| North Dakota.....            | 424                                | 26       | 61,481               | 145               | 9,350               | 1,290,929              |
| Colorado.....                | 388                                | 29       | 73,626               | 190               | 19,253              | 559,436                |
| Averages.....                | 709                                | 45       | \$113,333            | \$168             | 19,009              | \$1,199,635            |

1. Average annual income from all sources and for all purposes, including buildings.

2. Includes endowment.

Of the average annual income of this College just mentioned, \$108,786, the State has contributed \$56,028. The average assessed valuation for the seven years was, in round numbers, \$346,000,000. In other words, a man paying taxes on \$1000, actual value, has paid 5 cents per year in support of this College. The number of voters in the State is probably over 400,000. That is, each voter has paid on the average a little less than 14 cents per year in sup-



port of this College for the seven years mentioned. And since the organization of this College, nearly forty-two years ago, the average tax-payer has paid less than 4 cents per year in its support. For the first forty years of this College the State had appropriated \$792,287 and the College had property, including endowment, valued at \$1,097,033, or forty per cent more than it had cost the State.

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#### DISTEMPER OR STRANGLES.

**D**ISTEMPER or strangles is an infectious disease of horses, asses, and mules, usually manifested by an inflammation of the upper air passages and adjacent lymph glands.

In addition to the germ causing the disease there are many accessory causes which lay the system open to an attack; for instance, young horses between two and five years old are more predisposed to the disease than older horses, although the disease may appear at any age. Dentition, which is active in the early years of a horse, induces congestion about the head and causes general constitutional disturbance, which makes the system more receptive to the disease. The training of young horses predisposes them to the disease, as the first experience of the hot, impure, infected air of the stable, the excitement and perspiration attendant on the first handling, all contribute to a temporary loss of resistance to this disease. Fatigue and chill, like other weakening conditions, lays the system open to an attack.

The infecting material is found in the abscesses and all glandular swellings, in any eruptions on the skin, and in the discharges from the nose. Infected soil harbors the germs and allows them to multiply.

*Symptoms in Mild Cases.*—In the majority of cases the local symptoms are found on the mucus membrane of the nose and mouth, and the lymph glands between the jaws. The animals usually have some fever, there appears redness and often a mottled appearance of the mucus membrane of the nose, which may extend to the mouth and eyes. The mouth appears hot and dry, and there is an uneasy movement of the jaws. The nose, at first, is very dry and soon becomes the seat of a watery discharge, later becoming cloudy and the material sticky, and finally a thick pus forms. This pus may be colored a dirty white from inhaled dust, a brownish or yellowish color from exuded blood,

and a greenish tint from food materials mixed with it. The discharge is very abundant in young horses, coming from one or both nostrils. The patient sneezes frequently on account of the irritation in the nose.

Early in the attack of the disease a swelling is noticed in the space between the lower jaw. At first this swelling is confined to the glands forming distinct, rounded, hard swellings. These are early covered by a spreading of this swelling into the surrounding parts and completely obscures the form of the swollen glands, giving a more or less uniformly rounded, pasty swelling, which may fill the entire space between the jaws. A very characteristic symptom of a distemper swelling between the jaws is its steady and quick breaking down into pus and forming an abscess.

*Symptoms of Distemper When Extending to Throat.*—When the disease extends from the nose to the throat the horse carries his head forward with elevation of the nose, there is swelling of the throat from side to side and downward, with an uneasy movement of the jaws, slobbering, a difficulty in swallowing and a returning of food through the nose. The swelling of the throat may become so serious as to threaten suffocation by interfering with the breathing. Abscesses which form on the sides of the throat usually break and discharge on the surface of the neck.

In all cases the patients have a rough staring coat, a general sick appearance, and refuse feed and water. The bowels may become constipated and the urine high colored.

The mild cases of distemper practically all recover, while the complicated ones, with extension of abscesses in the throat, are very likely to end fatally.

*Prevention of Distemper.*—When distemper appears in a locality, all strange horses, asses or mules should be excluded from barns in which the disease has not occurred. Do not allow young, susceptible horses in public stables or yards, nor to come in contact with litter from them, nor allow them near public drinking troughs or buckets used in common. Do not use forks or other implements, which have been used about infected stables, to handle fodder for susceptible animals. Never allow horses to drink running water that has drained land, stables or yards where strange horses have been, or those open to suspicion. All cars and public conveyances should be disinfected before horses are loaded. Do not use harness, blankets, currycombs and brushes,



which have been near infected animals, on healthy or susceptible ones.

*Treatment.*—The mild cases usually recover without much treatment. All that is necessary is good nursing, cleanliness, dry stalls, pure air, warmth, nourishing and easily digested food (grass, green corn-stalks, bran mash, roots, apples, potatoes, ensilage, scalded hay, or oats), pure water, linseed tea, grooming and, in cold weather, blanketing. The patient must not be worked but should receive exercise in a sheltered field or yard. All operations are to be forbidden during an animal's sickness. It is advisable, in severe cases, to steam the inflamed nose with vapor from hot water, to which has been added one of the coal-tar products (zenoleum, creolin, chloro-naphtholeum). This may be accomplished by placing boiling water in a bucket and adding two quarts of a ten per cent solution of one of these disinfectants. Then attach a sack with its bottom cut so as to form a tube from the bucket to the nose of the horse. The nose should be steamed daily for an hour at a time until relieved. Should softening of the swelling between the jaws not take place readily, a poultice of linseed-meal or bran is beneficial in drawing the swelling to a head. When softening of the swelling occurs, a free incision ought to be made to allow the pus to escape. Only those understanding the location of important nerves and blood vessels should perform the operation. The patient's fever usually subsides as soon as the pus escapes. If there is a chronic discharge from the nose, or abscess, an injection of a five per cent solution of creolin or zenoleum gives prompt relief. The various complications should receive treatment appropriate to their nature. When a patient is convalescing, over-exercising and chilling is to be avoided. Nourishing food and pure water are necessary and a course of tonics is often beneficial. The bowels may be kept loose by giving half a pint of raw linseed-oil per day in bran, and a handful of buchu leaves once daily gives a free action of the kidneys.

C. L. BARNES.

*Aesop's Fables*, arranged for children by Nellie Perkins Dobbs, illustrated by Lydia Grant, and published by Crane & Co., Topeka, is a handsome volume of 141 pages. It will be of special interest to K. S. A. C. people since Nellie P. (Little) Dobbs was graduated from this College in 1890 and Florence Lydia Grant was assistant in drawing during the College year 1900-'01.

# THE INDUSTRIALIST.

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**Kansas State Agricultural College.**  
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## LOCAL NOTES.

Dr. C. L. Barnes, of the Veterinary Department, is tired of the blessings of single life. Invitations are out for his marriage to Miss Hazel Hill, of Medina, N. Y., December 28, 1904.

A reception was given last Tuesday night in the Girls' Gymnasium in honor of the stock- and grain-judging teams that represented the College so successfully at the International Stock Show, at Chicago.

The assignment committee of the Faculty has been very busy during the week, making assignments for the work of next term. Professor Remick assigned the senior students, Professors McKeever and Brink the juniors, Professors Kammeyer and Calvin and Miss Rice the sophomores, Professor Price, Assistants Rupp, Anderson and Short the freshmen, and Miss Holroyd the preparatory students. They report the assignments practically completed.

The Board of Regents, at their meeting last week, conferred the degree of A. M. on Miss Alice Rupp, assistant professor of English at this College. Miss Rupp has been a member of the Board of Instruction of the College for fourteen years. She is a graduate of the State Normal School of Indiana, located at Terre Haute, and before coming here was principal of the Polk school of Topeka for two years. Her pupils and collaborators feel that the degree has been bestowed on a most worthy worker, and congratulate her on the well-earned honor.

Miss Augspurger will spend her vacation with her parents, in Farmer City, Ill.; Miss Weeks will go to her paternal home, at Lincoln, Kan.; Miss Barnes will visit with her parents, at Blue Rapids, Kan.; Miss Tinkey will visit at Smith Center; Miss Barbour will enjoy her mother's visit at Manhattan. Professor Eyer and family will spend most of the vacation at Hiawatha, Kan. Professor Walters will make a trip to Independence, Kan., to investigate the newly erected cement plant near that place, and a majority of the teachers will attend the State meetings at Topeka.

The December meeting of the Manhattan Horticultural Society was held at Horticultural Hall, Thursday, December 15, President Albert Dickens in the chair. A paper on the "Successes and Failures of the Past Season" was read by A. J. Nicholson. The secretary's annual report was read, accepted, and adopted as the report of the society to the state society. The election of officers for the ensuing year resulted in the reelection of Albert Dickens, president; J. B. Haney, secretary; Dr. A. F. Waugh, first vice-president;



A. J. Nicholson, second vice-president; Robert Eastman, treasurer. The civic improvement committee, consisting of Albert Dickens, Judge Sam Kimble, A. J. Nicholson, and J. B. Haney, was continued. The official board of the society was made the program committee for the year. A. J. Nicholson and Robert Eastman were elected delegates to the State Horticultural Society. The meeting adjourned to meet on call of committee.

The Library has lately added a number of valuable books to its growing inventory. Among the three hundred or more volumes received and catalogued are the following: Cambridge—Modern History, 8 vols.; Goodspeed—The Province and the States, Vols. 1-7; Hough—American Woods, Vols. 7-10; Early Western Travels, Vols. 5-10; Lord—Beacon Lights of History, 15 vols.; New International Encyclopedia, 17 vols; World's Work, Vols. 1-7; Wilcox—Farmers' Cyclopedia of Agriculture. The majority of the remaining books of the list are of a technical or scientific character, ordered by the departments of mechanical and electrical engineering, architecture, domestic science, physical science, and biology.

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#### ALUMNI AND FORMER STUDENTS.

H. M. Thomas, '98, of Wichita, made a brief visit in town and at the College last Sunday and Monday.

Henrietta (Willard) Calvin, '86, delivered an address at the recent meeting of the State Grange at Paola.

Born, in Manhattan, on December 18, 1904, to M. M. Davis and Amelia (Spohr) Davis, junior in 1900, a son.

C. W. Johnston, student in 1896, graduated from the State University and is now clerk of the district court, Morris county.

John O. Morse, '91, after serving four years as clerk of the district court, has recently been elected county attorney of Linn county.

Clarence E. Wood, '79, was recently elected a member of the Oklahoma legislature. He is editor and proprietor of the *Orient*, a paper published in Cherokee, Okla.

C. A. Crowley, student in 1896 attended Washburn College one year and then studied law in his home town, Council Grove, where he is now a successful practitioner.

Harry E. Moore, '91, is now president of the Oklahoma Dairy Association. In respect to his creamery and refrigerator enterprise he says: "Am getting along slowly, but think I am laying the foundation for a good future business."

Mrs. M. D. Hofer and two daughters expect to leave for Chicago in about two weeks, where the Misses Christine and Retta [both of 1902] will enter the Chicago Musical College. They will take both vocal and instrumental music. Mrs. Hofer thinks well of Manhattan, and may return here when the girls have completed their musical education.—*Nationalist*.

John Samuels and Miss Lisle Dial [junior in 1902] were married at Bethel church, at the Blue, Wednesday evening, December 7, at 6:30 P. M. They will reside on the farm owned by the groom's father, near Stockdale. Mr. Samuels is a professional baseball pitcher and has played in Olsburg on different occasions.—*Olsburg Gazette*. The groom is a brother of Will Samuels, who clerks at Elliot's clothing store, and has many friends here who extend congratulations.—*Nationalist*.

In a letter from W. S. Sargent ['01] we found a dollar and a request to place his name on our subscription list. We take the liberty of quoting a part of his letter: "I am with United States Geological Survey party. We are taking elevations for topographic branch of United States Geological Survey. The work is very pleasant and gives one an excellent opportunity to see the country. We are now in the center of Bingham Basin. There are a great many ways and chances in the Basin to get homes."—*Nationalist*.

J. T. Skinner, '04, came in this week to renew old associations. In his jump into the world he seems to have landed on both feet, being employed by the Zeigler Coal Company, of Zeigler, Ill., as the chief engineer of its power department. This company is developing one of the largest coal mines of the country and employs the most modern methods, such as electric traction and lighting in the mines. Though graduating from the electrical engineering course, Mr. Skinner is in charge of all the power. W. D. Davis, another electrical engineer of '04, is assistant superintendent of the electrical department of the same company.

From the *Jayhawker* we learn that:

Edmund Secrest, '02, is now up in the mountainous district of Virginia, pursuing his work for the Bureau of Forestry.

T. E. Dial, '04, is located at 728 Osage street, Leavenworth, Kan., and is an electrician in the employ of the Kansas City Railway Company.

Friends of Ivan Nixon, '03, are delighted to hear that he is slowly regaining strength. His physicians speak very encouragingly of his recovery from the long siege of typhoid fever.

Edward Shellenbaum, '97, is announced by the Randolph papers as their new postmaster. He has filled the position of assistant in the office ever since his graduation here, and we congratulate him upon this recognition of his efficiency.

The election returns from Russell county show that the President carried the county by 936 plurality; the republican State ticket by over 700; while Fred J. Smith, '95, although a democrat, came out of the mix-up with a majority of 98 for county clerk.

W. A. Turner, a former student, who is now machinist on the United States' ship Florida, was here a few weeks ago and returned to the Navy without many of his friends finding out that he took with him a bride. Her name was Ethel Fleming, of Rock Creek, Kan.



Historical Society

VOL. 31

NO. 15

# THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .  
AGRICULTURAL COLLEGE


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# THE INDUSTRIALIST.

VOL. 31.

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No. 15

## SOME PROBLEMS OF THE PLANT BREEDER.

TO THE average man, nothing seems easier than to engage in the breeding of plants. To him it reduces itself to a question of gathering the largest seed from the largest plants; in growing the best from the best. What could be simpler? It seems to have taken even the botanical world a long time to recognize the significance in plant breeding of the differences which separate the plant individual from the animal individual—speaking now, of course, of the higher animals and plants.

To begin with, the progeny of animals can be secured as a series of successive births from a single pair, designedly mated for the whole period of the experiment. There is no such relation among the embryos in the seeds of a single mother plant, to one another, as exists among the offspring of a single mother among vertebrate animals. If one could imagine a vertebrate to be, so to speak, multicorporeal—having many bodies, all very essentially alike, and joined together by common body tissue and nourished by a common circulatory system—and could one further imagine each of these distinct yet united bodies capable of giving birth independently to offspring of possible diverse male parentage, one would have in the animal world a counterpart of the situation so far as it concerns seed plants.

To carry the analogy farther, if we could suppose such a multicorporeal animal to have possibly an unequal distribution of its specific characters among the different bodies and body regions, we would have what is quite possible with a seed plant, where the bud, and not the series of united shoots, is really the individual. Each flower bud being potentially different from all the other flower buds, the spores produced in different flowers in the same plant may be diverse, and the reproductive cells produced in the sexual generations within the spores may be of unlike potentiality as well.

A wheat plant, to select a familiar instance, produces, roughly speaking, 6800 pollen spores in the three stamens of its "flower." While the 13,600 sperms within these are intimately related, as one passes to other flowers of the head, or to other heads of the same plant, there is an increased degree of difference in the relationship. In a wheat plant for example, it is possible to have ten well-developed heads on a single plant, under normal field conditions, and these may bear 600 flowers, producing 8,000,000 sperms and 600 eggs. Now, the character of the relationship among all these is far more unequal, it will be seen, than that existing among the reproductive cells produced by the gametogenous tissue of a single vertebrate animal.

These differences in buds in different parts of a plant, which may give rise to differences in the reproductive cells as stated, has long been recognized by all horticulturalists and botanists. "Bud-variations," "bud-sports," etc., are phenomena sufficiently well known and may be the result of previous crossing or may not,—the causes are very obscure, plain enough though the facts themselves are in their consequences; since new forms of flowers, fruits and ornamental plants are constantly arising through bud-variation. It is evident enough, then, that in hybridizing plants, caution should be exercised, so far as possible, to mark the pollinations made from any single bud as the pollen source.

This leads to mention of the exceedingly obscure problem which constantly looms on the mental horizon of the plant breeder, that of so-called individual variation and of mutation. De Vries has conclusively proved that evolution of new forms may take place *per saltem*, and the mutation-form thus suddenly appearing will breed true to the new type through successive generations. But what makes a mutation arise, and can not one often mistake for the constant mutation-forms many of the multifarious variants that we find springing up within a so-called plant "species?" This is vital in plant breeding. A mutant is a new final form—a new species. A variant is one of a series, joined in a line traced by the oscillating pendulum of a more or less unstable and protean species. Led by the will-o-the-wisp of individual variation, the plant breeder may wander down through decades of experimenting, while nature holds her sides and laughs. The thing needful is not merely to put a plant where you want it, but to make it "stay put." Mutation forms are the final quest of the plant breeder working by se-



lection. It is becoming ever more evident that in order to work successfully in breeding a plant, its individual nature must be thoroughly and intimately known, and it must, moreover, be studied with reference to the physical environment. This means successive years of observations made on a quantitative basis, and carried on under diverse conditions of soil, moisture, light, heat, etc., all of which physical factors are in turn quantitatively analyzed. It is therefore evident that fundamental to success in plant breeding is the exposure of the plant in question during long periods of time upon the same soil, to climatic factors, all of which are exactly measured, while the responses of the plant, in terms of growth, tissue building, seed formation, etc., are to be likewise accurately determined by quantitative methods. In this way only can we come at what is inherent in the organism as contradistinguished from what is induced by changing environment. One may say, then, that a plant-breeding station is first of all a meteorological station, which is perfectly true. Indeed, this is recognized in Europe, and one of the most important of the commercial sugar-beet breeding establishments in Germany has as complete and as fine a set of meteorological apparatus as the German imperial weather bureau. Every climatic character being carefully and systematically determined, it is possible to compare the set of meteorological notes with the notes and measurements of the plants and arrive at a true conception of what in the plant is immediately responsive to environment and what is not.

Having found desirable varieties, nothing remains but to increase the quantity of seed and put it in the hands of the public. But the greatest caution must be exercised in matters respecting the yield. Special conditions, either climatic or cultural, at the experiment station, may combine to bring about an extraordinary yield, which will not be attainable under average circumstances elsewhere.

This calls up at once the necessity for coöperative experiments in plant breeding. One may say that next to the question of variation in plants there is no factor in plant breeding more obscure and more destitute of experimental data for its elucidation than the so-called effect of climate, and especially of the change of climate upon plants. What is acclimatization? What facts underlie the prevalent view that change of seed is desirable? It is manifest, of course, that this, too, is capable of quantitative analysis.

Accurate series of measurements of identical parts of plants carried on throughout their growing season, simultaneously in stations located in widely different climates, are absolutely essential to determine the meaning of "acclimatization." It is probable that the limits of adjustment to climatic change are rather closely correlated with the limits of individual variation in general. Indeed, it is more than possible that acclimatization is often simply the survival of successful variants in a series, which happen to chime in with the climatic factors in the new location.

Of all the attractive problems in the whole fascinating and vividly interesting field of plant study, none are more alluring than those questions which group around the subject of hybridization. Here, if anywhere, is the *terra incognita* of biology.

The cell problems which underlie the crossing of widely different forms are still to be explored. Few and meager are the data at present available. Some knowledge of real value concerning hybrids was contributed by Gregor Mendel, in 1865, and recent workers have widened the scope of the inquiry. There can be no question that, from the economic standpoint, a great field of development in plant breeding will be opened with the acquisition of more and more exact knowledge of the phenomena surrounding hybridization.

It is to be remembered that the plant breeder's work is necessarily slow. One generation of plants in a year is the most that we can attain to in the temperate north. Nevertheless, the results in plant breeding in America, as well as in Europe, are sufficiently tangible thus far to justify the public in expecting even greater results in the future. The long-continued, patient systematic study of a few species, with rigorous isolation of superior types, lies at the foundation of success, with now and then a brilliant piece of hybridizing, yielding some startling new forms of plant life. Such instances are reported but rarely, and are often, indeed, of doubtful authenticity, but the possibilities of developing new races of grains, fruits and vegetables by hybridization are so fascinating that the plant breeder finds in this occupation and this aim one of the most stimulating aspects of his calling. It is not merely to make a blade of grass grow where none grew before, but to make the blades that do grow larger and of better quality.

H. F. ROBERTS.



## THE CONTROL OF LOCUSTS IN ALFALFA FIELDS.

A S specialists among Kansas farmers, the alfalfa growers in the western counties are among the most successful and progressive. Favored by climate and soil, when aided by irrigation and freed from the occasional drawback of the attacks of locusts, the results of the cultivation of this hay plant leave little to be desired. That the western alfalfa farmers have practically solved the question of control of these pests is beyond doubt, though the successful methods require what occasional growers are slow to give—prompt action and persistent effort.

A short visit to several of the important localities in the alfalfa region the past summer, during the height of the locust season, convinced the writer that a more general effort is all that is needed to eliminate the insect factor from the question of success in alfalfa growing.

This forage plant is of special succulence during the dryer summer months, when the native herbage is often sapless and uninviting to the locusts, and these are thus led from surrounding areas to the fields under cultivation. To this fact some attribute the great number of the pests in the relatively limited fields, but it will not account for the abundant presence of the really injurious species, as these have on the other hand been mostly bred in the broken grounds themselves.

It is a common assumption with those not acquainted with the facts, that the locusts responsible for the damage to the alfalfa fields are species peculiar to the region, and of greater capacity for injury than the familiar ones of the eastern section, but this is not at all the case. The species particularly in evidence in the fields most seriously attacked are three or four in number. Indeed, commonly but two species are very abundant, and these are both forms widely known, occurring from the Alleghanies to the Rocky Mountains. These, in the order of their abundance, are the Differential Locust (*Melanoplus differentialis*) and the Two-striped Locust (*M. bivittatus*). In one locality a third species, *M. lakinus*, peculiar to the plains region, was equally abundant with the first named. These three find associates in limited numbers of other species, but none of them regularly present in sufficient numbers to warrant notice.

Respecting the manner of the beginning of attack, it may be said that the field is most likely to be attacked from one side or

part, which is evidently the breeding place of the pests. An area of higher soil free from herbage is often the place of origin of an attack, one year after another. The roadside is another source of infestation, as here the locusts have laid their eggs the season previous.

After the cutting of the crop, the ground being relatively bare, the locusts will spread more widely, and as the crop grows up they may often impede it greatly, by keeping down the young shoots. With the seed crop, beside the destruction of the foliage, much damage is done to the flower heads and the ripening seed, if the growth proceeds so far.

As a method of direct reduction of the destructive swarms, the use of the "hopper catcher" is in great favor with those who have tried it. This implement is made with considerable variation in details of construction, but is in all cases practically a shallow pan or set of pans of sheet-iron, about twelve or sixteen feet long, and eighteen inches broad, more or less, guarded at back and ends by upright wings of cloth, preferably oilcloth, to prevent the locusts from flying across or out of the pan as it is drawn along. In use, the pans are partly filled with water, upon which a thick layer of kerosene is poured. The wings may be about four feet high, and oilcloth is preferred because this material offers less hold to the claws of the hoppers that might otherwise cling to the wings and jump clear of the pan. To provide for its easy passage over the ground the pan is set on a series of low runners, only high enough to clear the irregularities in the surface, the front upper edge of the pan being thus lifted about ten inches above the ground. The lower it can be made to work the better, however. One arrangement sets the pan upon the teeth of the three-wheeled hay-rake called the "go-devil," and this plan embodies several desirable features: the apparatus is driven by horses walking behind the pan, and the locusts are only disturbed by the advancing teeth of the rake, thus jumping when the pan is sufficiently near to receive most of them as they alight. Such a catcher may be successfully used in herbage of any height up to two feet. The ordinary hopper catcher costs about ten dollars to make.

As to the efficacy of this implement, different growers agree that by its use the locust colonies may with ease be practically destroyed. In the matter of the expense of treatment, the most detailed testimony is furnished by Mr. R. E. Bray, of Syracuse, who



reports that he kept the locusts from destroying a field of forty acres by the use of the hopper catcher upon a three-acre strip along which the insects were making their advance, the work requiring the services of a man and team for two days at a total expense, including five gallons of oil, of seven dollars. In this experiment, locusts were destroyed to the amount of between thirty-nine and forty bushels, by actual measure.

In place of the hopper catcher, or in connection with it, much success has been had with the method of killing the hoppers with poison baits. The poison preferred in this connection is Paris green, or again, white arsenic, though the former is in greater favor. The bait is commonly prepared according to the formula published in press bulletin No. 133 of the Kansas Experiment Station: One hundred pounds of bran, eight pounds of sugar, one pound of saltpeter, and four to eight pounds of Paris green, the latter ingredient varied in quantity according to the ideas of economy of the operator. This mixture, being moistened with water sufficient to cause the bran to cohere slightly, is scattered in small masses together at short intervals over the infested field, and the attractive bait causes the insects to collect upon it and devour it greedily, after which they soon die. A field treated in this manner showed the locusts dead under the alfalfa plants as thickly as twelve or fifteen to the square foot of surface, over wide spaces. The material remains efficacious as long as any is left. Limited trials of the Criddle bait of horse droppings salted and poisoned show it also useful, but on account of the unpleasant character of this bait in the mixing and handling, as well as on account of the insufficient supply of the material, it is likely that it will not displace the bran bait already found so satisfactory.

It has been observed that the second and third crops of alfalfa are subject to attack especially in the areas of the field surrounding the stacks of hay of the first crop, the locusts having been carried with the hay to the stack site in great numbers, and later spreading from that base outward. Mr. Menke, of Garden City, has devised a satisfactory solution of this difficulty in the provision of a portable chicken house well stocked with barred Plymouth Rocks, which is moved from one stack to the other while the chickens are on the roost. With water provided fresh every day, the hens need no other feeding, and the output of rich meated eggs is visible proof of the profit of the method.

It has been held by some that flocks of wide ranging poultry, such as turkeys, are a sufficient protection to a considerable area of alfalfa. Others believe from experience that dependence cannot be placed upon turkeys, especially after the hoppers have reached mid-size, because the birds apparently become satiated with this food, and are not then active in pursuit of it. I observed the actions of a flock of turkeys in a small field nearly completely cleared of growth by the hoppers, and noted that the birds had become very fastidious, limiting their diet to the largest and clumsiest locusts, the more abundant and active species and individuals not being pursued. The chief value of such birds will be found where they can be made to feed upon the young locusts in their hatching grounds, and while it yet requires many insects for the meal.

While observing farmers have noted the preference of the egg-laying female locusts for certain limited localities in widely infested fields, I did not learn that any had attempted the control of the locusts by an attack upon them while still in the egg. As it is well known that the disturbance of the egg masses in the soil during winter goes far toward their destruction, it will, in the greater number of cases, be found very profitable to disk or plow the elevated or bare spaces in or about the field upon which the mother locusts have been seen to congregate at the season of egg-laying. This work should be undertaken in late autumn or early winter for the best results, thus allowing a longer time for the operation of the natural agencies which under the circumstances accomplish the destruction of the eggs so disturbed.

E. A. POPENOE.

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#### NEW YEAR'S RESOLUTIONS.

Under the above heading the *Farmer and Breeder*, of Sioux City, Iowa, publishes a page of excellent "advice" for the average farmer, contributed by a dozen or more of model agriculturists and teachers of agriculture. Among the contributors we find the following three from this College:

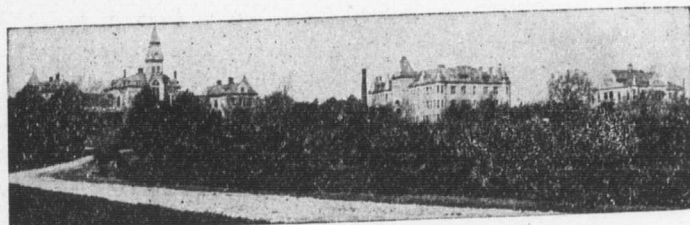
Pres. E. R. Nichols writes: "Every farmer and live stock man should resolve to keep a set of books so that he may know just what products are paying and what are not. No merchant would think of doing business the way most farmers are doing. Farmers should know what individual animals are paying and



what are not. A book, or a set of books, could be arranged so that this matter would take a minimum of time, and when the habit is once formed of putting down things each evening it becomes easy."

Prof. A. M. TenEyck gives the following advice: "A good New Year's resolution would be the following: *Resolved*, To keep full accounts with your farming business for one year, keep accounts with each field and with each separate enterprise. Make an outline map of the farm showing the division into fields, etc., and keep such notes in connection with this map as will show what kind of crop was grown on each field, time planted, date harvested, method of culture, yield per acre, etc. I believe that if such accounts and records were carefully kept one year by any farmer that he would always keep up the practice, and such a practice followed twenty years by any farmer would be of inestimable value to that farmer himself, both financially and otherwise, and such records would also be of great value to those who might farm the same farm after him."

Prof. A. Dickens says: "On the spur of the moment I cannot think of a better thing for the great northwest to resolve to do than to make a special effort to greatly increase the number of evergreens and the oaks which hold their leaves over winter in every location where wind-breaks will add to the beauty of the landscape and to the comfort of man and beast. It is rather trying to announce such a text without following with a sermon, but in case the above is too brief I would add that such a procedure will most certainly add to the value of every farm in sight; add to the feeding value of every ton of hay and bushel of grain; add to the chance for successful crops of fruit; add to the happiness of every one who lives upon or passes the farm for many years to come."



# THE INDUSTRIALIST.

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PROF. J. D. WALTERS.....Local Editor  
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## LOCAL NOTES.

The morning chapel exercises are now being held in the new Auditorium.

Mr. and Mrs. W. H. Thompson, of Iola, Kan., were visiting the College and Professor Eyer last Wednesday.

The Cook trophy, won by the students in the corn-judging contest, now occupies a place in the College library.

Professors Popenoe and Walters will attend a two-days' farmers' institute at Berryton, Kan., January 18 and 19.

Melba will sing in Topeka January 23. Tickets may be purchased from Assistant Brown, of the Music Department. Prices \$1 and \$1.50.

The Music Department has moved into the Auditorium. The old quarters are occupied by Miss Short and her classes in ancient history.

President Nichols went to Atchison last Thursday afternoon to inspect Midland College with regard to its facilities for educating teachers for the State teachers' certificates.

The Experiment Station and the Horticultural Department at the Agricultural College have sent specimens of sweet potatoes to the department of agriculture, Rhodesia, South Africa.

The Physics Department has bought from W. Gaertner & Co., of Chicago, an interferometer, an apparatus invented by Professor Michelson, of Chicago University, for measuring light waves.

Mr. Chas. Wolff, senior member of the well-known Wolff Packing Company, of Topeka, visited the College last Friday afternoon. After seeing the College and its work he decided to send his son to school here.

The Y. M. C. A. gave a reception in Kedzie Hall Monday evening to the new students. Professor McKeever made a very interesting address. Captain Shaffer also spoke to the students. The reception was well attended and all enjoyed a good time.

Professor Roberts and Assistant Freeman are preparing a series of photographs of germinating seeds. These pictures are taken daily and will show the development of several distinct types of plants. When completed, lantern slides will be made from them to be used in demonstrations and lectures.—*Students' Herald.*



The lecture course committee wishes to call attention to the following changes of dates: Daniel McGurk, from January 9 to Friday, January 13; Rabbi Harrison, from January 27 to Monday, January 23. Season lecture course tickets will be on sale at the Coöperative Bookstore. Price, \$1.50. Individual number tickets will be sold at the door. Admission to the McGurk lecture, 50 cents.

There is no doubt that the attendance for the present winter term will be very large, though we can make no definite statements as to the number at this writing. Secretary Clemons informs us that over a thousand students paid their incidental fees for the winter term during the first three days of the week, and there were large numbers of students present on Thursday and Friday, waiting to be examined and assigned. We shall publish a list of students by classes next week.

One thing this present legislature ought to do is to make appropriation to give the State Agricultural College a modern printing-office. Every other department of the College is up to date; but for some unknown reason the printing-office has always been neglected. Its presses are fine, the workmen in charge are masters of the art; but the office is handicapped for want of a few cabinets of stylish type, rules, borders, etc. The great Agricultural College ought to at least have a printing-office equal to the better class of country weeklies throughout the State.—*Jewell Republican*.

Prof. A. A. Potter, for several years scientific expert for the General Electric Company, of Schenectady, N. Y., has been elected to the position of assistant professor in mechanical engineering, and reported for duty last Tuesday morning. He will do the work formerly assigned to Asst. Prof. C. E. Paul, who left this College a week ago to accept the chair of mechanical engineering in the New Mexico Agricultural College. Professor Potter is a graduate of the Massachusetts Institute of Technology, with the degree of S. B. He has studied in several European schools, speaks German, French, Russian and English with fluency, and comes to us highly recommended. A short biographical sketch of the professor will be published in the next number of the INDUSTRIALIST.

The following State association meetings will be held at Topeka this winter: Kansas Board of Agriculture, January 11-13; Improved Stock-Breeders' Association, January 9-11; Kansas Swine-Breeders' Association, January 9-11; State Veterinary Medical Association, January 10, and the annual meeting and show of the State Poultry Association, January 9-14. The most liberal rate that has ever been obtained from the railroads has just been granted to all those who may wish to attend these conventions, viz.: One fare plus fifty cents for the round trip, except where one fare and a third is less, from all points in Kansas and from Kansas City and St. Joseph, Mo., to Topeka and return, tickets to be on sale January 7 to 14 inclusive, limited for return until January 16.

The society halls in the basement of the east part of Fairchild Hall have been considerably improved of late. The Webster and Alpha Beta hall has been frescoed and the Ionian and Hamilton hall has received a new floor and new opera chairs. The opera chairs are of the same make as those in the Auditorium. They give the room a greater seating capacity and a decidedly "tony" appearance.

The State Horticultural Society, at their annual meeting at Topeka last week, unanimously passed the following pertinent resolution concerning the Kansas State Agricultural College and its needs: "*Resolved*, That we recognize the necessity of better equipment for horticulture work at the Kansas State Agricultural College; and urge our lawmakers to deal liberally in providing with greatly needed buildings and suitable equipment. This is the only institution in our State which offers our young men and women an opportunity to study the various branches of horticulture and the sciences which underlie it. We also call their attention to the advisability of increased opportunity for experimental work in horticulture adapted to the western section of our State at the Branch Station at Hays."

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#### ALUMNI AND FORMER STUDENTS.

Fannie (Waugh) Davis, '91, of Menomonie, Wis., is visiting her parents, Dr. and Mrs. A. F. Waugh.

Alice Loomis, '04, was granted a three-years instructor's certificate at the recent meeting of the State Board of Education.

C. A. Kimball, '93, and Myrtie (Toothaker) Kimball, '02, lost their infant daughter December 31, after a short illness with pneumonia.

Mamie Alexander, '02, has returned from her sojourn in Colorado and is very much encouraged in respect to her health. She has resumed her work in the office of the Farm Department.

Glick F. Fockele, '02, was married December 18 to Miss Mary E. Finley, of LeRoy, Kan. Their many friends will unite in an expression of congratulation and good wishes for their future happiness.

Harry W. Johnston, '99, operator for the Santa Fe in the dispatcher's office at Chinesburg, Texas, remembered the editor with a large yellow draft on the Bank of Good Times, for three hundred and sixty-five prosperous days. We hope to be able to cash it as the days go by.

E. H. Webster, '96, has been appointed Chief of the Dairy Division of the United States Department of Agriculture. Mr. Webster has served in a number of responsible positions connected with the dairy industry, and in all of them with the highest distinction. There can be no doubt that he will perform the duties of his new office with like credit to himself.



P. H. Ross, '02, in charge of the United States Experiment Station at Kenai, Alaska, has returned to take the dairy course this term. His work seems to have agreed with him physically, as his health is apparently of a robust type.

Laura G. Day, '93, instructor in domestic economy in the Stout Manual Training School, made a hasty trip to Manhattan from Menomonie, Wis., in order to visit with Miss Edith McDowell, '93, and other friends during her vacation.

Prof. F. A. Waugh, '91, presented a paper on "Arbres nains: Usage, Propagation et Culture," before "La Societe de Pomologie et de Culture Fruitiere de la Province de Quebec," December 14, 1904. The French Canadian horticulturists evidently know where to get a good thing.

D. M. Campbell, special student last year, is now studying veterinary medicine at the Kansas City Veterinary College. He is assistant in chemistry at the same time, and, owing to the illness of the professor in charge, has been practically the head of the department for some time.

Bertha H. Bacheller, '88, director of domestic science in the Manual Training High School of Kansas City, Mo., will present a paper on "The Relation of Cookery to Digestion" at the evening session of the State Board of Agriculture, Thursday, January 12. The meeting is held in Topeka.

Mr. and Mrs. Ross Long ['99] have returned from their wedding trip and have taken rooms at the Hotel Baltimore. Mr. Long will continue his position of traveling salesman for the Knakal wholesale grocery house, and Mrs. Long will resume the management of the Western Union telegraph office.—*Republic*.

W. N. Birch, '04, who finished his work before Commencement last year and took a position in dairying at Lolo, Mont., has since been in several of the western states seeing the country, and came to Kansas in time for the holiday season with his parents near Topeka. He also paid the College a visit. He will be engaged in dairy work this year at Topeka or Omaha.

Miss Amy Hoover and Ross Long ['99] were married at Longford, Clay county, December 21, by Judge Goheen. The bride has been in charge of the Western Union telegraph office here for several months, until she resigned a few days since. Ross Long, a son of W. W. Long, is a well-known and popular young man. He is at present a traveling salesman for the Knakal & Co., wholesale grocers.—*Nationalist*.

Friends of Miss Mabel Groome will be interested to hear of her marriage to Chas. M. Gawthrop, of Williamsburg. This wedding took place Christmas day at the home of the bride's grandmother, Mrs. S. L. Holden, in Williamsburg. Miss Groome was a member of the senior class of K. S. A. C. Mr. Gawthrop is relief agent for the Santa Fe. The young couple will make their home in Chanute.—*Nationalist*.

In the death of Gen. J. L. McDowell, which occurred at his home in Elkton, Colo., December 21, one of the staunch friends of the College, and prominent former citizens of the town and the beloved father of several graduates of the institution, passed away. General McDowell had been in poor health for some time. He will be long remembered for his sterling qualities, and his children surviving have the sympathy of a host of friends. The burial took place in the Manhattan cemetery December 24.

David G. Fairchild, '88, agricultural explorer of the Department of Agriculture, is the author of part one of bulletin No. 72 of the Bureau of Plant Industry, on the "Cultivation of Wheat in Permanent Alfalfa Fields." This describes some very interesting experiments in Algeria in which alfalfa is planted in double rows, with forty inches between the double rows and twelve inches between the rows. The space between the double rows is planted to wheat alternate years. The system is said to give excellent results and to be specially adapted to regions with limited rainfall. The roots of the alfalfa cut off by cultivation add materially to the nitrogenous constituents and organic matter of the soil, thus increasing the fertility and water-holding power.

The expected has once more occurred, this time in the marriage of Howard F. Butterfield and Florence H. Vail, both of '01. The event took place at the residence of the bride's father and was performed by the Rev. O. B. Thurston, at 8:30 o'clock, December 28, 1904. Miss Dovie Ulrich, '03, sang "Love's Old Sweet Song" to her own accompaniment on the guitar, thus giving a charming introduction to the simple ring ceremony which followed. The rooms were decorated with ferns and other potted plants, holly, and carnations. The bride carried a bouquet of roses. The wedding gifts were numerous and beautiful, and several were the product of many hours of work by loving friends. Mr. Butterfield is instructor in manual training in the Pittsburg, Kan., city schools and is an estimable and popular young man. Miss Vail, by her unexcelled faithfulness, accuracy and general ability had, during the past five years, come to fill an important place in the Chemical Department of the College. For something more than a year she had been a regular assistant, and will be very much missed. The most ardent wishes of many friends for a happy and prosperous life will follow Mr. and Mrs. Butterfield to their Pittsburg home. Preceding the wedding several events were arranged in honor of Miss Vail. Mrs. Thurston and the "C. D. B." society entertained for her and Miss Retta Johnson, December 19. Mrs. Wahl and Miss Dovie Ulrich gave a bundle shower at the residence of the former, December 20. Miss Margaret Butterfield, at her home, on the 23rd, received in honor of her and Mrs. Earl Butterfield. TS<sup>2</sup> of S<sup>5</sup> + S held a meeting for her at the home of Miss Melton on the 24th, at which Mr. and Mrs. Earl Butterfield and Mr. H. F. Butterfield were also present. All of these occasions afforded opportunity for expressions of good will, and many substantial tokens of appreciation were presented.



*Arch*

Historical Society

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NO. 16

# THE INDUSTRIALIST

ISSUED WEEKLY BY

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*Editor-in-Chief, - PRES. E. R. NICHOLS*  
*Local Editor, - - PROF. J. D. WALTERS*  
*Alumni Editor, - PROF. J. T. WILLARD*

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# THE INDUSTRIALIST.

VOL. 31.

MANHATTAN, KAN., JANUARY 14, 1905.

No. 16

## THE ORIGIN OF CATTLE.

AS IT is necessary to go back several centuries into the geology and zoölogy of prehistoric times to trace the origin of cattle, we can only make suppositions from recorded observations as far back as history dates, from bones that have been found, from what competent paleontologists maintain, from our own observations of variation in cattle and fossil remains, and then form our conclusion of their origin.

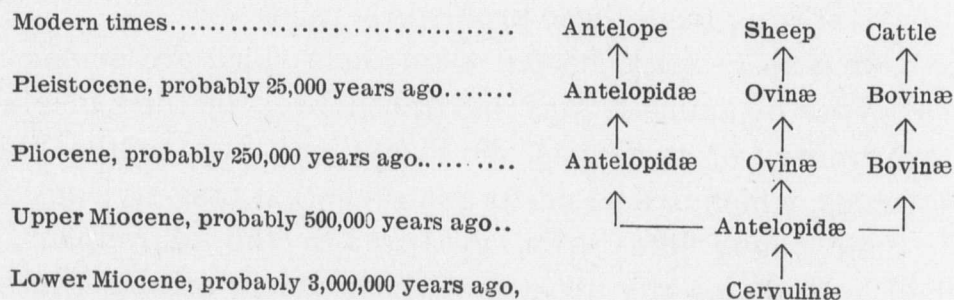
"In almost every part of Europe, skulls evidently belonging to cattle have been found, though far exceeding in size any now known."—*Youatt*.

History records a species of wild cattle (*Bos primigenius*), from which scientists tell us our domesticated cattle have descended, as having been exterminated in Poland about two and one-half centuries ago. This conclusion is rendered more likely by the discovery of the remains of one of the same species in a bed of turf in Scandinavia which would require about one thousand years for its formation. According to the laws of correlation and anatomy, sometimes a single bone is enough to convey an idea not only of the size, but also of the species of the animal. *Bos longifrons* of northern Europe, the bones of which represent an animal at an intermediate stage between the deer and the cow, is also supposed to be one of the progenitors of our domestic cattle. Such animals having once lived, with no evidence of our present domestic animals having lived in those ages, is evidence that these must have sprung from those prehistoric races.

According to geology, hoofed mammals, which are among the highest types of animals, may be traced back in their origin to the forerunners of mammals, the Prototheres, up to the living Monotremes, which are so ancient in style that they lay eggs and hatch their young like birds, up through the Marsupials, or pouched animals, as the opossum, whose young are born in em-

bryonic condition, up to the highly organized division known as the Ungulates—animals which have hoofs. We have evidence of the cow once having had four equal digits in her hoofs, and as the weight fell upon the axis of the two center digits the two outer ones lessened in size, from disuse, until they were used only when the animal slipped. With our present domestic cow they are of no use at all, nothing but little stubs called dewclaws, representing the remnants of what were once equal parts of the hoof. In the case of the hog these extra digits are more pronounced and their extra metacarpal bones still remain apart from the others clear to the hock joint. In the cow it is only a little tapering splint. In the horse the splint bones are the supposed remnants of aborted digits of the foot. We have specimens in various museums of the small hoofs growing on the side of the large center one. The Perissodactyla, or two-toed animals, lost the digits of their feet from five to three, and from three to one, as in the case of the horse. The Artiodactyla, or even-toed animals, lost theirs from four to two, and still have two parts to their hoofs, as the cow, sheep, deer, and hog. In some cases these were gradually tapered off from the hock joint downward, as in the case of the cow; in others we see the reverse, a half-aborted, inverted splint.

The primitive cow can only be traced with slight degree of accuracy back to the Lower Miocene age, about three or four million years ago, so that long before Noah built his ark certain kinds of cattle had been domesticated, and were probably similar to our cattle of to-day. In the commentaries of Cæsar we learn that the Britons possessed great numbers of cattle. He also says that Germany produced two kinds of wild cattle, one distinguished by its mane and the other by its excessive strength and swiftness. Cattle are also spoken of in the siege of Troy, though no description is given of them. The following diagram from Zittel shows the ages in which the various families branched off from the original ancestor:





There are many causes for this variation from the aboriginal types down to the several families, genera, and species that now exist. For instance, the rugged, barren rocks of the Shetland Isles, with only moss, heath, and seaweeds, together with a cold climate, produced a small, shaggy cow. The frigid regions of the North produced the long-haired musk-ox (*Ovibos moschatus*); the temperate zones the bison, various species of antelope, deer, sheep, and goats; the hot climate the Cape buffalo (*Bos Caffer*) of Africa, Gaur (*Bos gaurus*) of India, Bush cow (*Bos brachyceros*), with a small, round body, the fleet, fine-skinned gazelle of the Sahara desert, and the Gayal of Bengal. The last belongs to the genus *Bos gavaens* and is found wild in Bengal, where the bull leads the herd and defends himself against any wild animal of the jungle. They are also domesticated and used by the natives for dairy and beef purposes.

The color of the cattle of various countries is influenced by light, thickness of the skin, heat, size, soil, abundance and kinds of food, and their habits and environment. For instance, the species of antelope whose habitat is near the jungles of Africa, are very fleet, for protection against beasts of prey. The rich pastures of Sussex produced cattle of superior size and weight, while the privations of Wales lessened the bulk and thickened the hide of the Welsh runt. The tawny and fawn-colored breeds, such as the Brown Swiss, Jersey, Guernsey, some of the South American and the original Texas cattle, were probably introduced into Spain and France from Egypt in medieval times by warring tribes of these countries who had to take large numbers of cattle with them for subsistence.

Obviously the reason for our modern cattle coming down to us from prehistoric times as higher types of animals is only a case of the survival of the fittest. Lord Tankerville, the owner of Chillingham Park, in England, says that the wild, white cattle of that park engage in the most furious battles, which often end in the death of the weaker ones, so there is a most rigorous selection of the more vigorous bulls. As this natural selection continued for centuries the most hardy and better class of animals survived, while the weaker ones succumbed to starvation, or were killed by carnivorous animals.

We see traces of the primitive wildness in our domestic cattle of to-day. For instance, the common Devon cattle are similar in

every respect, excepting color, to the wild white cattle that have been preserved for curiosity in some of the parks of the nobility of England for the last four or five hundred years. The Devon cattle, as far back as their history is recorded, came from Devonshire, England, and no great distance from where the wild white cattle of Chillingham, Chartley and Somerford Parks once roamed the forest unrestrained. Almost without exception domestic cows, when running at large in a pasture, will conceal their calves in the grass and weeds until they are several days old, coming to them only a few times a day. If anything approaches the calf in hiding it will put its head close to the ground and lie very still. This is a marked characteristic of the wild cattle, and is indicative of primitive wildness. The wild white cattle of the different parks of England, having been separated for several centuries, and on account of the prejudice existing between their owners, have not been allowed to mix, so they have become as different as some of the domestic breeds. They are all alike in beauty of form—short legs and straight backs, horns of fine texture, thin skin, acute sense of smell, and all have a peculiar cry more like that of a wild beast than the bawl of ordinary cattle. The Chillingham cattle, however, differ from other herds in having a small mane on their neck and shoulders and in being more wild than the others. They take advantage of the irregularities of the ground and glide along on the opposite side of the hills when visitors approach, so that one has to proceed with the utmost precaution in order to see them at all. The herd is led by a king bull, who acquires his rank by his own prowess. He maintains this right for two or three years while his strength and vigor last, then a younger and more energetic rival defeats him and takes his place, unless both are killed in the struggle.

The Chartley cattle are not so wild as the Chillingham cattle, but this is probably due to the fact that a public road runs along one side of that park and they have become accustomed to seeing passers-by. They have black ears, black muzzles, and black hair around their hoofs and eyes, and the tips of their horns are black. The Chillingham cattle have similar markings, but their ears and muzzles are red.

The cattle of Somerford Park have no manes, but curly hair on their necks and shoulders. They are a domesticated, polled herd, but have all the peculiar features of the Chillingham and Chartley



herds. They are the best example of a tame variety of originally wild cattle. History and tradition agree in showing that the fierce, gigantic Urus (*Bos primigenius*), though now extinct, was the probable progenitor of the wild, white, forest breeds of England. There are at least three cases on record of where two of the enormous skulls were found locked together by the horns, showing that they fought until they destroyed each other.

The following from Sir Walter Scott will give an idea of the wild cattle at his time:

“Mightiest of all the beasts of chase  
That roam the woody Caledon,  
Crashing the forest in his race,  
The mountain bull comes thundering on.  
Fierce, on the hunter's quiver'd band,  
He rolls his eyes of swarthy glow,  
Spurns, with black hoof and horn, the sand,  
And tosses high his mane of snow.”

In Hungary the forces of nature have not yet been turned out of their course by the action of man, so that the cattle there are large and shaggy, and have horns from three to five feet long. They are supposed to be another branch from the Urus. Like all other cattle, they can be domesticated when taken sufficiently young, and many of them are used by the natives of that district. These cows hide their calves in the bushes until they are about six weeks old.

Cattle that have been subjected to domestication readily become wild again under suitable circumstances, and, consequently, we find on the extensive plains of Paraguay and Buenos Ayres large herds of half-wild cattle that were introduced into South America by the Spaniards more than three centuries ago. They also brought cattle into Mexico and Texas and allowed them to run at large over those vast plains; and that was the origin of the semi-wild Texas steer with which we are familiar. Their long, pointed horns are also indicative of primitive wildness. They were a necessary means of protection. Many Galloway and Angus cattle scarcely a century ago had horns, and even now there is an occasional Galloway with little loose stubs, called “scurs,” representing the remnants of horns.

The bovine races of America are all descended from those of Europe and Asia, the improved breeds coming from the British Isles, the Texas cattle from Spain, and the antelope, deer and

buffalo probably crossed the Bering Strait from Asia. It does not seem so strange that sheep, buffalo, deer and cattle have the same remote ancestry when we examine the history of other animals. The pug dog, for instance, and the greyhound are very dissimilar in form and yet it is generally admitted that all dogs descended from the same species of wild dog. The tendency to variability is in itself hereditary, and it is greatly influenced by environment. In two different countries two animals of the same species may become entirely different after a few generations on account of the different conditions, such as climate, food, soil, and other animals existing in these countries which may be enemies.

There are nine genera of ruminants—camel, lama, musk-ox, deer, giraffe, antelope, goat, sheep, and cattle. The last one represents the genus *Bos*. Genus and species are determined by a knowledge of the exact animal economy, or arrangement of parts. Family *Bovidæ* embraces domestic cattle, bison of this world, wild and domestic races of Indian cattle, the yak, and the old world buffalo. They are all large, and their horns are hollow, bent outward, and are round at least at the tip. In order to classify the different animals it became necessary to group them in order of closest resemblance. The domestic cow has been given the following classification:

Class *mammalia*, animals having *mammæ*, or teats.

Order *ruminantia*, animals ruminating, or those which chew the cud.

Family *bovidæ*, Latin *bos bovis*.

Genus *bos*, Latin *bos bovis*.

Species *taurus*.

The semi-civilized tribes of ancient times cared little for the improvement of their herds, and so they have come down to our forefathers as rough, ungainly beasts, and only in the last two hundred years have they been successfully improved. The Friesian people who lived on the southern shore of the North Sea have raised the black and white cattle for more than two thousand years, but not in all points intelligently or successfully. They used the splendid succulent herbage that grew so well on the lowlands which have been reclaimed from the sea in producing large cows that gave large quantities of milk, without regard to quality. They had no Babcock milk-tester, or any other accurate means of determining the per cent of butter fat in milk. So the Holstein-Friesian cattle, originating from a cross between the white cattle of Friesia, relatives of the white cattle of England



and the black German cattle of Hesse, have come down to us a large type of cow, giving a large quantity of milk, but somewhat deficient in quality. The Channel Island cattle, the Jerseys and Guernseys, have come to Normandy from a strain of cattle in Egypt that had originally branched off from the *Bos primigenius* and lived for centuries in that hot, dry climate, have come down to us a small, light cow, giving a moderate amount of milk, but very rich. The fine qualities as milkers were brought out by the most scrupulous care of the people of Jersey Island. On July 16, 1763, they passed a law forbidding the importation of any foreign cattle except for the purposes of slaughter. The first historical statement concerning Jersey cattle that I am able to find is that of Lewis of France, 1734. "The cattle of this Island are superior to French cattle."

Both the Friesians and the people of the Channel Isles, like Jacob, who experimented with the herds of Laban in Bible times, were not far enough advanced in the scientific principles governing the feeding and breeding of cattle to gain the best results.

Not until 1750, when the English and Scotch began to take advantage of the natural laws of evolution, *i e.*, variation, heredity, and selection, were cattle successfully improved. Robert Bakewell was the first great improver, followed by Colling brothers; Thomas Bates, who bred for refinement and milking qualities; Thomas Booth, who bred for constitution and beef qualities, and Cruickshank, Watson, and Tompkins, who bred for early maturity and easy keeping qualities in the Shorthorn, Angus and Hereford breeds, respectively. The results of their efforts are seen everywhere among live-stock communities to-day, and the enormous price paid for some individuals is evidence of their success.

So we see that the principles of selection, so uncertain in nature, have become potent and reliable in the hands of man. While man does not produce the variation, he cannot prevent its occurrence, he turns it into right channels to make the proper proportion of parts and utilizes to the best advantage nature's law, which is: "All organic beings tend to rise in the scale of life."

CHAS. W. MELICK.

## GLANDERS.

GLANDERS is one of the oldest diseases known, its contagiousness being recognized as long ago as the seventeenth century. Glanders is caused by a specific germ (*Bacillus mallei*) and affects horses, asses and mules. The goat, cat and dog sometimes contract the disease from living in stables with glandered horses. Pigs may contract the disease by inoculation. Cattle and chickens are immune. The disease attacks the mucous membrane of the nose, and may extend to the wind-pipe and lungs. When the lymphatic glands of the surface of the body are affected, the disease is known as farcy.

The germs are found in the discharges from the nose and the farcy buds. The disease is transmitted to other animals, including man, by inoculation through wounds or mucous membranes. There are also many additional ways in which animals may be affected, such as common drinking troughs, feed boxes, mangers, hitch racks, harness, and any equipment used around an infected stable; also neck-yokes, shafts and poles used with glandered horses.

SYMPTOMS.—Glanders may occur in the acute or chronic form, or it may attack the surface of the body in the form of farcy. The acute form of glanders begins with a chill, high fever, the mucous membrane of the nose is at first hot and dry, and soon there is a watery discharge, which later becomes bloody. Nodules and ulcers form on the mucous membrane of the nose and discharge pus. These changes in the nose may take place in two or three days. There is also an abundant diarrhea, and the urine contains a large quantity of albumen. The patients become very weak and rapidly lose flesh. Early in the attack of the disease the lymphatic glands of the lower jaw become swollen, forming nodules, and without any great amount of heat or tenderness and little disposition to form pus. If these glands have been swollen for some time there is a tendency for them to become attached to the jaw. In cases of acute glanders the general termination is death, which takes place in from three to fourteen days.

The first symptoms of chronic glanders oftentimes are not easily recognized owing to the absence of distinct symptoms in the first stages of the disease. The first noticeable sign of the disease is a watery discharge from one or both nostrils, which later on be-



comes sticky and of a yellowish-gray or yellowish-green colored pus mixed with some blood coming from ulcers on the inside of the nose, and more particularly on the partition separating the nostrils. These ulcers are generally star-shaped, and they may extend so deeply into the septum as to cause perforation. The swelling of the lymphatic glands along the lower jaw is even less sensitive than in acute glanders. These glands are hard, varying in size from a pea or bean to that of a small bird's egg, and have no tendency to break down into pus. When glanders affects the skin (farcy), one of the main symptoms may be the swelling of a joint and engorgement of the limb from lymphangitis, or nodules may form along the line of the lymphatics; these nodules vary in size from a pea to a hen's egg, and have a tendency to soften and discharge pus, after which they heal rapidly. New nodules may form, following the same course as the previous ones.

MANNER IN WHICH GLANDERS MAY BE DISTINGUISHED FROM DISTEMPER.—In both these diseases there is a discharge from the nose. In distemper it is usually from both sides, while in glanders, as a rule, it is from one side only. In glanders there are the characteristic ulcers formed in the nose, which, after healing, leave a star-shaped scar. In distemper there is a doughy swelling between the branches of the lower jaw, which is hot and painful and interferes with the swallowing and causes the horse to carry his head forward. This swelling has a tendency to soften, break and discharge pus; while in glanders the swelling along the lower jaw is painless and the swollen glands remain distinct and cord-like. Also, in testing with mallein the glandered horse has a large, painful swelling at the point of injection of the mallein, which will not occur in the animal with distemper.

MALLEIN TEST.—Mallein is the sterilized product of a vigorous growth of the germ of glanders in bouillon. There are no germs in the mallein, but simply the toxin (poison) formed during the growth of the germs. The germs of glanders are constantly pouring their toxin into the patient's system. This toxin being a poison causes the glandered horse's temperature to rise a degree, or even more, above that of the healthy horse. In doubtful cases it is advisable to give the mallein test. The animal to be tested should have his temperature taken every two or three hours the day before the test; then inject beneath the skin one cubic centimeter of mallein. In the glandered horse the temperature begins

to rise in from eight to ten hours and continues until the maximum is reached in about sixteen, and gradually subsiding, becoming normal in about thirty-six hours after the test was made. The healthy horse will not have any appreciable rise in temperature. The glandered animal has a large painful swelling at the point of injecting the mallein, which remains for several hours. This characteristic gradual rising and falling of the temperature, together with the other symptoms, prove beyond doubt the nature of the disease.

**PREVENTION.**—All glandered animals should be immediately destroyed and not allowed to come in contact with healthy animals through stables, common drinking troughs, harness, or any stable equipment. All suspicious animals should be isolated and cared for independently of healthy animals, until examined by a competent veterinarian. Infected buildings should be disinfected with a one to five hundred corrosive sublimate solution, and a week later the process repeated. Then in two weeks after the second disinfection all wood-work should be whitewashed. All infected apparatus that cannot be easily disinfected should be boiled for one hour. Forage and litter in infected stalls should be burned. Attendants caring for suspicious animals should exercise precaution against contracting the disease.

Glanders is practically an incurable disease, therefore it is not advisable to treat it.

C. L. BARNES.

#### A NEW LAW PROPOSED.

The forestry committee of the Kansas State Horticultural Society recommended at the annual meeting at Topeka, two weeks ago, that the following be pressed for passage before the coming session of the legislature. The report was adopted:

An Act abolishing the office of Commissioner of Forestry and Irrigation and transferring the control of the State Forestry Station to the Experiment Station council of the Kansas State Agricultural College.

**SECTION 1.** The office of Commissioner of Forestry and Irrigation shall cease to exist on July 1, 1905, and the control of the State forestry stations at Dodge and Ogallah shall be transferred at that date to the Experiment Station council of the Kansas State Agricultural College, subject to the following regulations: The Experiment Station council shall have full power to make any experiments at the forestry station and at the Fort Hays Branch Experiment Station to determine methods of growing forest-trees



and kinds of trees best adapted to the conditions and needs of Central and Western Kansas. There shall be established at each of the Dodge and Ogallah stations a model forest plantation of twenty-five or more acres, according to plans prepared by the forester provided for in section 2 of this act, and approved by the Bureau of Forestry of the United States Department of Agriculture. Under the recommendation of the forester, the Board of Regents of the Kansas State Agricultural College shall appoint a foreman for each of the Dodge and Ogallah stations who shall reside thereat and have immediate supervision of the work carried on at this station. The foremen shall be capable men who are familiar with methods of tree culture in Central and Western Kansas conditions. The free distribution of trees by the stations shall be discontinued after the requests for trees now on hand shall have been so far filled from the present supply as is practicable, but surplus trees or forest products at the stations may be sold at any time at the usual market prices. *Provided*, That all money derived from the sale of any surplus trees or forest products shall be applied to the maintenance of the station making the sale.

SEC. 2. At their first regular meeting subsequent to the taking effect of this act, the Board of Regents of the Kansas State Agricultural College shall elect a forester who shall become a member of the Horticultural Department of the College. The person chosen as forester shall be a man of technical forest training, and whether any candidate for this position is technically trained shall be determined by the Forester of the United States Department of Agriculture.

SEC. 3. The following sums, or so much thereof as may be necessary, are hereby appropriated out of any money in the State treasury, not otherwise appropriated, for carrying out the provisions of this act for the fiscal years ending June 30, 1906, and June 30, 1907:

## SALARIES AND TRAVELING EXPENSES.

|                                          | 1906.        | 1907.        |
|------------------------------------------|--------------|--------------|
| For the purchase of trees and seeds..... | \$3,000      | \$3,000      |
| For labor and incidental expenses.....   | <u>1,200</u> | <u>1,400</u> |
| Totals.....                              | \$4,200      | \$4,400      |

SEC. 4. The Auditor of State is hereby authorized to issue his warrants upon the Treasurer of State for the purpose and amount specified in section 3 of this act upon presentation of vouchers duly approved by the secretary and treasurer of the Board of Regents of the Kansas State Agricultural College.

SEC. 5. This act shall take effect and be in force from and after its publication in the official State paper.

# THE INDUSTRIALIST.

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## LOCAL NOTES.

President Nichols was at Topeka several days last week, attending the State agricultural meetings.

Professors Popenoe and TenEyck will attend a farmers' institute at Seneca, Thursday and Friday, January 26 and 27.

Books to the value of a hundred dollars were received for the library, January 10, from A. C. McClurg and Company, Chicago.

On January 9, the library shipped four hundred eighty-seven volumes of magazines to the State bindery at Topeka for binding.

Professor Willard went to Independence, Kan., last Monday to investigate the possibilities of the cement industry growing up at that place.

Professors Willard and Calvin will attend a farmers' institute at Edgerton, Thursday and Friday, February 16 and 17. Frank Holsinger, of Rosdale, and Professor E. B. Cowgill, of the *Kansas Farmer*, will also present papers.

Prof. C. E. Goodell, formerly of the chair of history of this College, is announcing two new courses of historic lectures for graduate students at Denison University. The courses will cover the subjects of American History and the Development of the Constitution.

Contractor Henry Bennett has completed the rebuilding of the front of the First National Bank and has made a good job of it. We congratulate Regent Geo. S. Murphey upon the handsome building and well-lighted and arranged banking room which he now occupies. The First National of Manhattan is now one of the most modern banks in the State.

Clyde Rickman discovered the loss of about \$15 from his trousers Saturday and immediately began a search for the culprits. Three town boys had been noticed loitering about the shop and suspicion fastened upon them. Within two hours Sheriff Boyles had been notified and the money was secured. When confronted by the officers they were found to have hidden the money, but were prevailed upon to produce it. Sheriff Boyles did quick and effective work. It is probable that these boys will be sent to the reform school. Superintendent Rickman will keep strict watch hereafter and there is small likelihood that any committing the like offense will escape.—*Students' Herald*.



The Faculty of the Kansas State Agricultural College took an active interest in the programs of "farmers' week" at Topeka. President Nichols, Professors Erf and Ten Eyck, Doctor Barnes, and Assistants Shoesmith, Haney and Kinzer, attended the meetings and read papers or shared in the discussions. Miss Bertha Helen Bacheller, of the Kansas City Manual Training School, a graduate of the Agricultural College, also read a paper, and a large number of graduates and former students of the College attended one or more of the sessions.

The art exhibit at the Carnegie library last week afforded a fine opportunity to enjoy a collection of unusually good pictures. Some of the best artists were represented, such as Leonardo da Vinci, Michael Angelo, Rapheal, Rubens Van Dyck's "The Crucifixion," "Madonna with St. Rosalie." From Rembrandt there were the "Clothmakers's Guild," "The Anatomy Lesson," "The supper at Emman's," and five others. Franz Hal gives "The Fool," "Nurse and Child." There were fine reproductions of the works of Van Ruysdeel, Jan Steen, Gerold Don, and others of "The Dutch Masters."

Profs. A. M. TenEyck and Henrietta W. Calvin and Supt. J. G. Haney will attend the twentieth annual meeting of the Rooks County Farmers' Institute, to be held at Stockton, Tuesday and Wednesday, January 24 and 25. The program of the institute contains the following foot-note: "A rich treat is in store for the members of the institute this year. Aside from the general topics, a fine literary program will be rendered. Choice selections by the Stockton Mandolin Club and the Stockton Quartet will ensue, interspersed with declamatory readings by the Misses Addie Chipman, Luella Southard, and Etta McCubbin. Tuesday night an operatic entertainment will be put on the boards at the opera-house."

Andrey A. Potter, the newly elected assistant professor in mechanical engineering, was born in Russia. He received his early education, as well as his academic training, in the country of his birth. In 1898 he came to America and took up the study of engineering at the Massachusetts Institute of Technology, in Boston, graduating from the same college as Bachelor of Science in electrical engineering. During his course at college he paid particular attention to thermodynamics and theoretical electricity. Soon after his graduation from the technicum he entered the employ of the General Electric Company, at their testing department at Schenectady. After becoming familiar with the practical operation and testing of the electrical apparatus and machinery manufactured by said company, he became interested in steam turbines and was induced by the company to specialize in steam turbines and research work on superheated steam. In connection with this work he carried on a very elaborate set of experiments on the determination of the specific heat and entropy of superheated steam. He also installed several of the very large turbine units manufactured by the General Electric Company,

notable among them being the 2000-kilowatt units which he installed for the Old Colony Street Railway Company at Quincy, Mass. He remained with the turbine department until January 1, 1905, when he assumed his duties as assistant professor at this College.

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#### ALUMNI AND FORMER STUDENTS.

H. A. Avery, '02, visited friends around College when down from Wakefield during the holidays.

Dr. and Mrs. J. W. Evans, of Council Grove, are the parents of twin girls, born the last day of 1904. The little misses have been named Lucile Marguerite and Dorothy Fay Evans.—*Nationalist*. Dr. Evans is a member of the class of '94.

Mary (Lyman) Otis, '94, and Isabel (Frisbie) Criswell, '94, are visiting their home people in Manhattan. Their husbands, D. H. Otis, '92, and J. H. Criswell, '89, arrived the last of the week, having attended the meetings of the State Board of Agriculture at Topeka.

R. W. Ashbrook, second-year student in 1895, is now second lieutenant and battery quartermaster and commissary in the Seventeenth United States Infantry, stationed at Zamboanga, P. I. He still retains a friendly feeling for the College and interest in its progress, and subscribes for the *INDUSTRIALIST*.

Andrew Pottorf, '99, visited the College recently for the second time since his graduation, although he lives only about twenty miles from here, near Riley. He was in Manhattan on duty as a juror and came up to the campus to get his bearings so that he will not be such a stranger next June when he comes to the triennial banquet.

Harriet (Thackrey) Reece, '98, of Valentine, Neb., writes for Experiment Station publications in anticipation of embarking in the dairy business on a small scale when Mr. Reece's term of office as county clerk expires. She says there are two small Reeces there, for whom they plan that they may some day call the K. S. A. C. their Alma Mater. Miss Cora Thackery, '98, is also with them, assisting in the county clerk's office.

J. G. Haney, '99, has resigned his position as superintendent of the Fort Hays Branch Experiment Station and accepted one as assistant in farm crops at the Iowa State College, Ames, Ia., where he has moved with his wife, Anna (Streeter) Haney, '99. During his period of service at Hays the old military reservation has undergone remarkable transformation, about six hundred acres of the original prairie sod having been converted into experimental fields, most of the old buildings torn down, and several new ones erected. Mr. Haney has conducted the work with a high degree of industry and unlimited energy and we hope that his new field of labor may be one of profit and pleasure to him.



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*Editor-in-Chief, - PRES. E. R. NICHOLS*  
*Local Editor, - - PROF. J. D. WALTERS*  
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# THE INDUSTRIALIST.

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## KNOW THYSELF.\*

I THINK it was Goethe who said in substance that it is not given to man to understand the ultimate meaning of life, but he must nevertheless attempt such a solution if he would know what life really has in store for him as he lives it. It was Socrates who bequeathed this perplexing but ever fascinating problem to the ages.

Socrates was interested above all things in the well-being (Eudaimonia) of the individual, and he found the best method of promoting this highest condition of life to consist of insight into one's own nature. This charming old maxim then, *Know Thyself*, with its endless depths of suggestion for self study, I regard as expressive of one of the most fruitful achievements of early Greek philosophy.

It is true that Socrates did not reach a full and complete knowledge of himself (for that matter, what philosopher of to-day can do so?), but he was the first to attack the problem in a serious, methodical manner; and the very fact that he went at the work barehanded, almost without any kind of suggestion as to the meaning of the subject, makes his achievement more glorious. It is also true that, measured by the standard of the average individual character, Socrates' view of the ethical subject was inadequate and one-sided; for he thought that, judging from his own peculiar type of mind, to *know* the right was equivalent to *doing* the right. The practice that must accompany theory in the usual case was thus overlooked. According to the Socratic definition of ignorance, Rousseau was one of the greatest of ignoramuses. For he said he knew, but could not do the right.

But this self-searching method of the great philosopher, half a truth though it may have been, was highly significant from the fact that it has been a great source of inspiration to philosophic

\*A paper presented for class credit in Harvard University.

thought for twenty-four centuries, and from the further fact that it was the first important step toward the discovery of the inner life. I believe it to be the part of every person to-day, philosopher or layman, who may hope to develop into even relative maturity of character, to devote some time to serious contemplation of some phase of this same problem of self-examination.

After all, perhaps Socrates *was* right. Perhaps our wrongdoing *is* all a result of ignorance of insight into our own lives. Perhaps, if I had the understanding of a Socrates, trained though in evil I may be, this clear insight would simply *impel* me to act rightly in the face of all habits to the contrary. It would not require a very great stretch of the imagination to make a connecting link between the Socratic volition of insight and Professor James' volition of attention.

To trace the development of this task of self-scrutiny up to the present time, in any detail, would require an entire volume, but it might be worth while merely to enumerate some of the high places where its fruits stand out in bold relief.

The one-sided Cynics and Cyrenaics were the first to take up a phase of this problem of the self in their efforts to find out what the good life is. So did the Stoics and the Epicureans attack it in a more rational form. Especially did the later Stoics come into close relation with this subject in their search for a method of overcoming the world by subordinating the self to the divine law of the universe. In the case of the self-oblivious ecstasy of the Neo-Platonists, and of the self-renunciation of the early Christians, not a little attention was given to self-scrutiny as a means of getting closer to God.

And so have the great minds of all the ages up to the present day devoted long, silent hours to prayer and meditation, wrestling with the spirit, as it were, in an inspired effort to fathom the depths of the riches of the human soul, in their imagination often coming in sight of the goal set up by Socrates and yet never reaching it. Whether we cite as evidence the spiritual doctrines of Christ, or the self-scrutinizing skepticism of Descartes, or the charming pessimism of Schopenhauer, or the epistemological paradoxes and riddles of Kaubt, or the transcendental maxims of Emerson, or the cosmic consciousness of Walt Whitman—in all these and more besides, we find instances of great men who had



implicitly in mind at least the equivalent of the old Socratic watchword, *Know Thyself*.

But this subject has a more modern aspect, and, it seems to me, a more scientific one than these older writers have given it. There has been too much effort to study the mental self, as a merely given, unattached entity, without much reference to the past or the future and with not enough reference to bodily growth or conditions. By this I mean to say that the genetic method so characteristic of the biological, evolutionary, and physiological aspects of this study have been too much neglected, until recently.

As an essential preparation for immediate self-study one ought to be well acquainted with the leading facts of a number of the modern sciences; that is, such facts as have contributed most directly to his present physical and mental condition.

(1.) Note the biological significance of a nervous organism in relation to the ability of the creature to make adaptations to the environment. An understanding of the way in which the possession of the cerebral hemispheres enables the living organism to substitute mental for merely structural adaptations, and thus to rise higher in the scale of existence, is especially important. A further fact of momentous consequences is that of the extremely long period of infancy exclusive to the human being, whereby he is enabled to perfect a nervous organism more complex than that of any other member of the animal kingdom.

(2.) The anatomical and physiological phases of this question would involve a study of the human organism with special reference to the nervous system, as well as a consideration of the functions of the latter, in the maintenance of such great life processes as respiration, digestion, and assimilation.

(3.) As an evolutionary study, one ought to acquaint himself with the best modern interpretation of such matters as the origin of species, treated under such sub-divisions as natural, organic, and mental selection, and fortuitous, or chance variation. The questions of the inheritance of acquired characters and congenital characters would also force themselves upon the attention.

(4.) The social contributions to this quest of self would also be many. Man as we find him to-day is a naturally social and a highly socialized being, dependent, in a measure, upon his fellow beings for all that he has and enjoys. The great significance of such socializing institutions as the family, the state, the church,

the school, and the special vocation would necessarily demand serious consideration.

(5.) A serious study of psychology naturally furnishes a fitting climax to this long-continued quest of the self. Herein one is brought, as nearly as is possible, face to face with his own consciousness. By means of various experiments upon his own organism, during which the results are read in terms of the accompanying mental processes, one may obtain a close acquaintance with his perceptive processes. Any good, modern text-book of psychology will furnish the method. And then, if, supplementary to the foregoing, one will observe carefully, and experiment with, the operations of his own imagination, memory, attention, habit, emotion, and volition, he ought certainly to find a higher way of life.

(6.) As an addendum to the foregoing series of courses in self study, I would suggest what might here be called *Revelation*. My reason for not including it in the formal series is that it is not, strictly speaking, a study. After one has taken these scientific courses of study he cannot help being profoundly impressed with the many manifestations of the "Hand that is divine." This being the case, his final full increment of power comes through simply waiting occasionally, silent and expectant, for the ministrations of the Immanent Spirit.

The following course of reading is suggested as a guide to any one who may be in pursuit of a serious study of self:

Rogers—Student's History of Philosophy.

Spencer—Principles of Biology.

Darwin—Origin of Species.

Martin—The Human Body.

Baldwin—Development and Evolution.

Fiske—Outlines of Cosmic Philosophy.

Royce—Outline of Psychology.

James—Principles of Psychology, Vols. I and II.

WILLIAM A. MCKEEVER.

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Rev. Hannum was called to Iowa Monday morning on account of the serious illness of his mother. Professor Brink has kindly consented to fill the pulpit at the United Presbyterian church at the morning service next Sunday. The professor also preached for the first Baptist church in Topeka, Sunday, January 15, both morning and evening.



## CHOICE OF BOOKS.

AS literature may be made one of the most powerful influences in the development of character, there are many important factors which should be taken into consideration in selecting the books best fitted to make the influence attained through reading pure and true, and give in every possible way the best developed character. Good habits, broader and higher ideas of life may be attained through reading good books. Health, beauty, knowledge, culture and wisdom come as a result of filling the mind with the best literature and assimilating all the good qualities, blending into the character all that is true, beautiful, strong, and good.

The quality of the books read is of prime importance. All the reasons for care that apply to the choice of friends among our associates hold good when we select our friends among books.

Books should be true—that is, they should contain no false statements. True scientists are very careful in the selection of the works they are willing to accept as authorities to aid them in their special lines of work. It is just as important, though we do not always realize it, that the books which may affect our philosophy of life be true as that scientific books be true. In either case they may greatly help or hinder.

Books should be sound and healthy from a moral standpoint. Bad books corrupt us as bad people do, not only by imparting evil thoughts but by developing false ideas of life. Useless books might almost be classed with bad books. By useless books is meant those books which give nothing in return for the time and energy spent in reading them. In every other field of labor we are looking for results. Why not also in the field of books?

J. B. Braithwaite says: "The mind requires nourishing food. Trifling reading enfeebles it." The reader of a book should be greatly benefited in other ways besides the mere passing of time or the gain in pleasure; whatever knowledge, insight, beauty and power the book contains should be added to the reader's character. Coleridge says: "Some readers are like the hour-glass—their reading is as the sand. It runs in and runs out, but leaves not a vestige behind. Some, like a sponge, which imbibes everything, and returns it in the same state only a little dirtier. Some, like a jelly bag, which allows all that is pure to pass away, and returns only the refuse and dregs. The fourth class may be com-

pared to the slave of Golconda, who, casting away all that is worthless, preserves only pure gems."

There should be variety in the selection of books read in order that the character and experience may be well rounded. "The greatest mind is the one that comes the nearest the attainment of a perfect harmony of physical, emotional and intellectual life." The same thought holds true in regard to reading books that our President brought out in his talk on "Regular Work" as a preparation for life. If we would attain a full development, a rounded, well-balanced character, "all the hollows" must be filled up. If but a few muscles of the body are used, those muscles become strong through use; but the muscles that receive no exercise lose their strength and become useless. So it is with the mind: history, biography, poetry, essays, natural science, philosophy, etc., must all have a place, if the highest intellectual development is to be reached.

MARGARET J. MINIS.

#### THE SARGENT SYSTEM OF PHYSICAL TRAINING.

DR. SARGENT'S, or the Harvard System of Physical Training, started in 1869, when Doctor Sargent took charge of Bowdoin College gymnasium as student instructor. At that time the equipment of the gymnasium consisted of certain German apparatus—parallel bars, horizontal bars, trapeze, etc., which were used by few students only. The mass of the students did little or nothing aside from enforced military drill, from which they revolted. They were hardy fellows and accustomed to outdoor work, yet few were really well developed, most of them having done work which left impress in characteristic asymmetry and faulty attitudes.

In 1871 attendance at the gymnasium was made compulsory to all classes, and Doctor Sargent was called upon to devise a system of exercises that would be at once efficient, progressive, and popular. A careful study of the problem thus presented led to the formation of certain general principles, which have since served as valuable guides.

It was seen that attitudes necessitated by occupation became fixed habits in ratio to the length of time they were held uncorrected by other attitudes; also, that in individuals possessing unequal muscular development, faulty attitudes were often the result of the apparent shortening of stronger muscles, the in-



creased tenacity of these muscles extending a constant pull with the result mentioned.

Thus the necessity of supplementing the development due to occupation was clearly seen, and also the rational method of effecting this by the local development of the relaxed weaker muscles. To do this economically and definitely, various machines were devised which offered the required resistance. The first of these was the adjustable chest-weight, and it was a very crude one when compared with the one used in the gymnasium of the present day. One has great sympathy for those Bowdoin students when knowing they were "compelled to pull those window weights over a wooden roller by aid of an iron handle, in a cold, unfinished building, four times a week." However, this experiment proved to be a successful one, and in 1878 Doctor Sargent was enabled to have the first pattern of his developing appliances constructed.

These consisted of chest-weights, chest-expanders and developers, quarter-circles, leg machines, finger machines, etc.—forty different pieces. They were first used in his private gymnasium in New York City, in 1878, and were placed in the Hemenway Gymnasium, at Harvard College, in 1879. As the appliances were not patented, but given to the public for educational purposes, they were soon copied in one form or another by various manufacturers, and have since been generally introduced into the school, college, athletic club, Young Men's Christian Association gymnasiums throughout this country, and in different parts of Europe.

In formulating his system of exercises Doctor Sargent has been guided by theories based upon sound physiological principles. These I will give in his own words:

"1. The person should be sufficiently interested in the exercise to give it his attention in order to secure the volitional power to start the movement.

"2. There should be a weight or a resistance to overcome in order to bring out the working force of the muscle. In using a weight, the muscle gradually acquires the force with which it tries to contract.

"3. The exercise must be performed with sufficient vigor and rapidity to engage the energetic contraction of the muscles employed. When this is done, old tissue is broken down and in its place is supplied new material in increased quantity, thus aug-

menting the size and strength of the muscles. The muscle gains the power and energy which the exercise requires it to put forth.

"4. Weak parts must first be strengthened, and then as many muscles as possible must be brought into action in order to secure a full orbed and harmonious development of the entire body. One-sided development is usually attained by robbing some other part of its share of the body's nutriment. Most persons in their daily occupations use the flexor muscles more than the extensors, thereby cramping the vital organs and interfering with their functions.

"5 A sufficient number of muscles should be called into action at one time to stimulate the action of the heart and lungs and increase the circulation and respiration. This is one of the most important considerations to bear in mind in regard to exercise. To keep up this increased respiratory activity and to aid the heart in removing the waste material and hastening forward the new, the limbs and walls of the chest must be absolutely free from ligatures or constrictions. The slightest interference with the action of the respiratory muscles at this time embarrasses the functions of the lungs and heart. This is the reason why loose clothing is always advisable for exercise.

"6. All vital processes depend largely upon the maintainance of animal heat. But animal heat is now known to be generated in the blood while passing through the muscles, and not in the lungs, as was once supposed. The full contraction of the muscles greatly aids this function and helps to force the warm blood through the tissues and back again to the heart.

"7. In order to realize the best results from physical exercise and keep up the general nutrition of the body, all muscular effort should be followed by a bath or vigorous stroking and rubbing.

"8. The exercise of the young should be of such composite nature as to bring about the coördination of the muscles. This involves principally the training of central nervous system. All gymnastic sports and athletic games that require skill, dexterity, coolness, courage and presence of mind are included in this list, and are exceedingly valuable to any system of physical training as adjuncts in the development of character."

Doctor Sargent says: "America needs the happy combination which European nationalities are trying to effect: the strength-giving qualities of the German gymnasium, the active and ener-



getic properties of English sports, the grace and suppleness acquired from the French calisthenics, and the beautiful poise and mechanical precision of the Swedish free movements, all regulated, systematized and adapted to our peculiar needs and institutions”

Doctor Sargent has been an ardent worker, unbiased in his opinions, and charitable in his achievements. By the introduction of his new developing appliances he has opened up the possibility of the gymnasium to thousands to whom it was formerly an institution of doubtful value.

MARGUERITE E. BARBOUR.

#### A FEW WORDS ABOUT SINGING.

Melody is the absolute language in which the musician speaks to every heart.—*R. Wagner.*

**S**INGING is an art, and of all arts the most difficult to master; and any one who intends to learn it must be prepared to give the same devotion to it as is demanded by other arts, as painting and sculpture.

Remember that the human voice is the most delicate of all instruments and subject to more, and more varied influences than any other. The singer has to combine in himself the instrument and the performer; and while all the artistic and intellectual qualities necessary for the instrumentalist are required by him, he is compelled beyond that to realize that he is a living instrument and to exercise over himself all the care that players exercise over their most cherished “weapons.” He has not only to learn how to sing, but how to be and remain fit for singing. He, more than any other musical artist, will find that he is affected by moral as well as physical and intellectual causes, and he must face this fact boldly.

As to the rule for physical care, common sense must guide every one. Constitutions vary. Only remember the old proverb: “We must eat to live, and not live to eat;” or, neither must we turn night to day or *vice versa*.

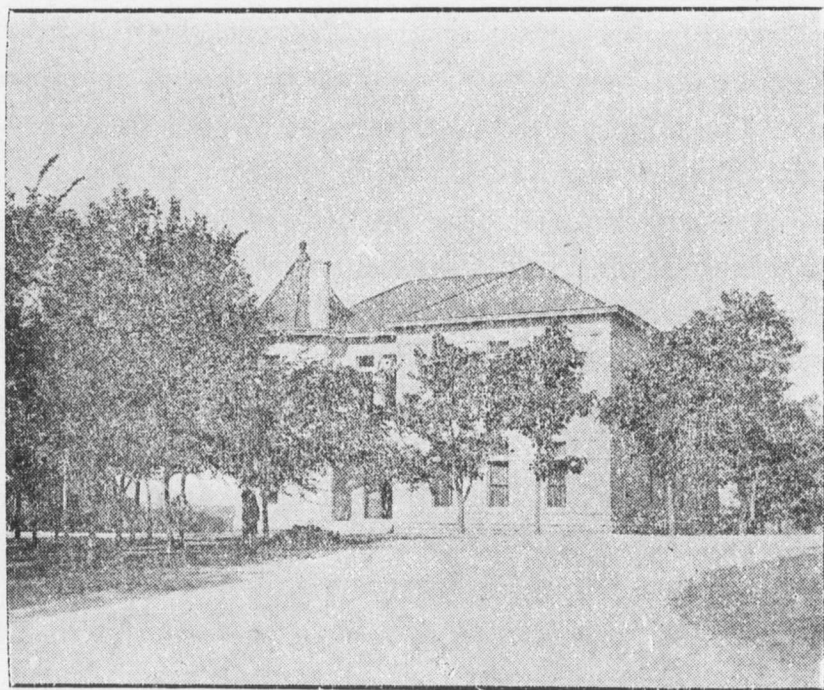
Singers are often subject to nervousness when singing in public. Do not be ashamed to admit that you are nervous if it be so. Instead of letting your nerves overcome you, force them to do your bidding, and instead of nervousness meaning fear you will find that it means courage and power to do your best.

The English language is not the most suitable for singing, al-

though it is not nearly so unfavorable as it is the fashion to make out. The words of a song are as much worthy of the singer's study as the music, therefore study the text apart from the music.

For a singer to be successful he or she must be in position to express and bring home to the audience such emotions as love, hatred, anger, fear, grief, and pity. All these and many other such feelings have constantly to be transmitted by the singer, and it is to the most natural and faithful exposition of these, and that most consistent with the other equally important points of the art of singing that the student's attention should for a long while be patiently and perseveringly directed. OLOF VALLEY.

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Kedzie Hall.



# THE INDUSTRIALIST.

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## LOCAL NOTES.

The blacksmith-shop has set up a new shear and punch machine.

The Riley County Educational Association will meet at Leonardville on Saturday, February 4.

There will be no *Jayhawker* published this month. The next number will appear in February.

The Botanical Department has received one hundred seventy-five new varieties of grass seed from Germany.

President Nichols was at Topeka last Monday and Tuesday attending the editorial association meeting and hearing Booker T. Washington lecture.

Ex-Governor Hoard, of Wisconsin, addressed the students on Friday afternoon, January 13, in the Auditorium, on "The Relations of Agriculture, Education, and Progress."

Miss Ella Weeks enjoys the comforts of a private office. She now occupies the office room vacated by Professor Remick, while the professor has moved five doors north on the same corridor.

Last week Doctors Colt, Cave and Moffitt operated on Dan Circle, a student from Hazelton, Barber county, for appendicitis. The patient is making a nice recovery under the care of Miss Driver, superintendent of Parkview hospital.

One of the most interesting laboratories in College is Professor Walters' new modeling shop. The class in clay and plaster modeling numbers eight students, all from the architectural course, and meets on Monday forenoon, but most of the students work extra nearly every afternoon in the week.

Senior student Claude B. Thummel, a Marshall county boy, has received the appointment to West Point from the Fifth congressional district, and will take the examination at Fort Leavenworth, May 1. Claude is captain of D company of the cadet battalion and a soldierly looking young man. This is the third time within the past year that this honor has been granted to a member of the College battalion.

The State Board of Agriculture, at their annual meeting, "Resolved, that this board has watched with much interest the growth of the movement in various states of the Union to introduce the study of the elements of agriculture in the common schools. We believe this movement to be of great importance to the future of agricultural growth and progress. It promises to impart a useful

basis and understanding to the sons and daughters of the farm. What is needed is the growth and development of the farm intellect, a broadening of understanding of what science can do, and a better knowledge of the complex problems which attend good farming everywhere. To this end we need to save to the farm all we can, by the processes of education, the best intellect that the farm produces. We believe this teaching of the elements of agriculture in the common schools will greatly aid this much-desired result."

The regular monthly meeting of the Manhattan Horticultural Society will be held at three o'clock P. M. in Horticultural Hall, on Thursday, January 26. The program is as follows: "Buying and Planting Nursery Stock," Albert Dickens. "Organization and Purpose of Fruit Growers' Associations," J. B. Haney. Five-minute talks on How to Improve the Horticultural Society, Mrs. Sam. Kimble, S. J. Norton, Wm. Baxter. Report of delegates to State Horticultural Society.

The Board of Regents was in session last Thursday to transact the routine business of the winter term and to elect a professor of veterinary science and State veterinarian. The chair, which has been vacant for several months, was offered to Dr. F. S. Schoenleber, a graduate of the Iowa Agricultural College, and the Chicago Veterinary College, and at present the dean of the McKillip Veterinary College in Chicago. Dr. Schoenleber has accepted the responsible position and will be in Manhattan in a few days.

We are in receipt of a new text-book on higher geometry, prepared by Dr. A. Emch, formerly of this College and at present professor of mathematics at Colorado State University. The book is a handsome, well-illustrated volume of 267 pages and is published by J. Wiley and Sons, New York. Professor Emch's "Introduction to Projective Geometry" meets a long-felt want in our literature of synthetic mathematics. It is the first systematic and comprehensive text-book on this subject published west of the Atlantic, and its contents, spirit and modern character will undoubtedly make it a standard work wherever projective geometry receives the attention which it deserves. There is nothing more beautiful and fruitful in all mathematics than the conceptions and generalizations of modern geometry, and Doctor Emch has succeeded in putting the subject in an uncommonly fascinating form.

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#### ALUMNI AND FORMER STUDENTS.

D. H. Otis, '92, formerly professor of animal husbandry here and now superintendent of the Deming farms in Labette county, visited the College Saturday and Monday. He was accompanied by Mrs. Otis and their son Edward.

W. D. Davis, '04, who has been in the employ of the Zeigler (Leiter) Coal Company, at Zeigler, Ill., visited the College last week. He returns to Zeigler to take a higher position than he held formerly, with a corresponding increase in salary.



Glen Shepherd, '02, visited the College Wednesday of last week.

R. C. Cole, '02, who has been foreman of a stock ranch at Hudson, S. D., visited the College this week for the first time since his graduation. He prefers a more congenial climate during the winter season and may change his location permanently.

J. M. Westgate, '97, has been taking a two months' vacation from his work as assistant in the Bureau of Plant Industry, United States Department of Agriculture. This vacation has been of a somewhat enforced character because of the bad effects that followed over-exertion in Oregon last fall. He is entirely recovered now and will soon resume work.

A recent number of the *Nationalist* contains copious extracts from an interesting letter from Bert R. Elliott, '87. He is still in the Klondike and is now spending his seventh winter there. Though not prospering greatly in the accumulation of gold, he is expecting to realize more richly next summer, having considerable pay dirt accumulated and waiting for water. In spite of the hardships of a miner's rough life, he is in the best of health.

E. H. Webster, '96, is, with C. E. Gray, author of Farmers' Bulletin No. 201, which treats of "The Cream Separator on Western Farms." This is a condensation of Bulletin No. 59 of the Bureau of Animal Industry and deals especially with the farm separator and its advantages to the owner. It is a bulletin which should be in the hands of every dairy farmer, and may be obtained without charge by addressing the Secretary of Agriculture, Washington, D. C.

J. E. Payne, '87, who was connected with the Colorado Agricultural College and Experiment Station for six or eight years, and has probably made more extended observations than any one else on farming and stock raising on the great plains, is the author of bulletins 87 to 90, just issued by the Agricultural Experiment Station of Colorado. These treat of "Cattle Raising on the Plains," "Dairying on the Plains," "Wheat Raising on the Plains," and "Unirrigated Alfalfa on Upland."

F. A. Waugh, '91, contributes an article for the *New England Farmer* which is one of a series to be presented in that journal and furnished by a large number of able men, the general subject being the general needs of New England agriculture. Professor Waugh heads his article "Greater Faith Wanted," and develops it under the headings: "More Faith in the Business," "More Investment of Cash," "Development of More Intensive Specialties," "More Attention to the Work of Agricultural Colleges and Experiment Stations," and "More Attention to Agriculture in the Grange." The article is written in Professor Waugh's vigorous and attractive style. Professor Waugh is also author of an illustrated article in the *Photo Era*, describing a very simple method of making micro-photographs which requires no apparatus but the microscope and an ordinary camera, and in his hands gives results of great excellence.

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VOL. 31

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♦ ♦ ♦

*Editor-in-Chief,* - PRES. E. R. NICHOLS  
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# THE INDUSTRIALIST.

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No. 18

## SERVICE OF EXPERIMENT STATION MEN.

[The following "editorial notes" are taken from the December number of the "Experiment Station Record," issued by the office of Experiment Stations, United States Department of Agriculture, A. C. True, director.]

THE relation of the experiment station to the department of instruction and to various forms of extension work in agriculture proved a very live topic of discussion at the recent annual convention of the Association of American Agricultural Colleges and Experiment Stations, at Des Moines. The matter came up on several occasions in the general sessions of the convention, and the question "How much teaching, if any, is it desirable that a station worker should do?" was a special theme for conference before the section on experiment station work. The general tenor of this discussion and the attitude in which it was approached were most gratifying, and evidenced a clearer appreciation of the important field and the higher purpose of the experiment station.

A great deal has been said of the advantage to the station man of being connected with the teaching force of the college, of coming in contact with students, and of so presenting his work that it will be within their grasp. It has been urged as an inspiration to the investigator, and a safeguard against straying too far from the practical in the ultimate aim of his work. The practice of requiring station men to serve in this dual capacity has been very general ever since the stations were established, and at present about fifty-four per cent of the station workers do more or less teaching. The amount varies greatly, a few giving only a limited number of lectures on advanced subjects, while others carry an entire department of instruction, either alone or with the aid of young assistants. "The tendency seems to be toward an increase in the number of station men who are also doing teaching work," and apparently also toward a greater rather than a less amount of teaching on the average. This is due, in part at least, to the recent growth of agricultural education and the differentiation of

agricultural instruction, which have made the demand for additional instructors more pressing.

While it was quite generally conceded by the speakers at this conference that a "certain amount" of teaching might be advantageous to station workers, there was equal unanimity that an uncertain or indefinite amount is not advantageous, but is often prohibitory of any work which can be regarded as investigation. The kind of teaching required is also an important consideration. The distinction was emphatically made between teaching elementary branches, or the fundamentals, and advanced work. The teaching done at the agricultural colleges in this country is of necessity very largely the teaching of fundamentals, and this was held to be a disadvantage rather than an advantage to the investigator. One director of long experience declared the claim that the teaching of fundamentals and the drilling of classes for fifty per cent of his time is an advantage to the investigator to be "nothing but a pleasant fallacy."

Ten to twenty lectures a year by the heads of departments was mentioned by several speakers as a fair amount which might be conceded to be an advantage to the worker, as a means of gathering himself together and clarifying his views; and others mentioned a course of advanced instruction occupying six hours a week and so arranged as to leave three days a week entirely free from teaching. All agreed that any considerable amount of teaching, even of advanced grade, was disadvantageous to the station worker, as it distracted his thoughts from his investigation and consumed or broke up his time.

Few men have the faculty which enables them to pass readily from their teaching work to their investigation, or to utilize to advantage for that purpose fragments of time represented by a few hours scattered through the day. There is great loss of energy and of efficiency under such conditions, and the spare time is likely to be largely frittered away. The situation might often be relieved by greater consideration for the station men in arranging the schedule of instruction. The time of a half-station man may be so completely broken up by two or three periods of class-room work a day that only work of the simplest kind, requiring the minimum of attention, is possible. Some institutions arrange to have the teaching of such men come during a certain part of the day, or on alternate days, or during half the



year so as to leave more time free from interruption. If a part of the year can be left free from college duties, one serious objection to the dual service is met.

Again, the uncertainty of the amount of college work liable to be required of him introduces an element of doubt which often discourages the station worker from planning any investigation requiring his continued attention. Many exigencies arise in college work, such as an extra large class, the demand for a course not usually given, pressure of short courses, absence of the regular college instructor, and the like, in which case the station man is pressed into extra service; and these contingencies often tend to make the station man feel that his time is not his own until the college term has closed.

A number of stations where the division of time has heretofore been satisfactory, owing to the limited demand for agricultural instruction, are now becoming embarrassed by the increased call for their services in that line. These stations frankly admit that unless additional funds can be secured to provide adequately for the teaching work they can not hope to maintain the high position in agricultural research which they have occupied. This is one of the dangers of the increased interest in agricultural education and the differentiation of agricultural courses. The number of students increases and courses are multiplied, without increased appropriations or any material aid to the teaching force, and the erstwhile investigator finds himself doing full teaching work, with lectures to be revised and adapted, examination papers, practicums, faculty duties, and students coming to him for advice and assistance.

Every station director of experience will admit that the undivided time of one man is far more effective and valuable to the station than half the time of two men with college duties. As one speaker put it, "In this matter two and two do not always make four. I am sure that two half men are not anywhere equal to one whole man, and to go still farther, I do not think that four quarter men are worth anything" (in investigation). This strikes the keynote of a popular delusion.

The effect of the dual position on the character of station work and the development of agricultural investigation is an important point to be considered in this connection. There is a vast difference in the quality of station work, growing out of the men them-

selves, and the conditions under which they are working. Many men have been placed upon the station staff as a matter of expediency or custom who are not suited to the work and who regard it as an added burden. Because a man is a good teacher it does not follow that he will make a resourceful and energetic experimenter. Much of the work done at the stations is not investigation or research in the proper sense of the word. It is merely the testing of this or that crop, this or that method of culture or fertilizer, a comparison of rotations or of feeding rations, or a demonstration of some fact which has been worked out elsewhere. The nature of the case prevents it being more than this.

If we look the ground over we shall find as a very general rule that our best investigation has been done by those workers who have had least teaching to do, and, conversely, that the stations whose workers have had practically to carry their respective departments in the college—and there have been many such—have added comparatively little to the sum of agricultural knowledge. There are few exceptions to this rule, and the converse condition is so common as to be much in evidence and to keep down the average grade of experiment station work in this country.

In an address delivered at one of the congresses at St. Louis this fall Dr. David Starr Jordan quoted one of his correspondents as criticising the work in agricultural science in this country, where it is more largely endowed than in any other country, on the ground that there was too much striving for practical applications, and not enough time given for the fundamental research on which these applications must rest. "The proportion of applied science in agriculture is too great in this country. While we do not need fewer workers in applied agricultural science, we do need more workers who would devote themselves to fundamental research."

This is a fair statement of a condition, with no attempt to assign a cause. One of the fundamental causes is undoubtedly the conditions referred to above. Many a station worker is compelled by the character of his college duties to become little more than a consulting expert in his line, confining himself to the answering of correspondence and conducting a few trials or experiments, and is obliged to forego undertaking anything in the nature of an investigation. There can be no gainsaying the fact that this dual service has done much to retard the development of agricultural



investigation and to discourage the efforts of investigators of much promise.

The ultimate result is the only criterion by which the advantage or disadvantage of such a practice can properly be judged. We have had practically fifteen years of experience with it, under a great variety of conditions, and it is certainly a poor theory that will not justify itself in that time. Any division of a station man's time is unwise, even though his salary may seem to be justified on the theoretical number of hours he is expected to teach, when it defeats the real purpose in view in adding this man to the station staff and robs him of the opportunity to do work of a high order.

More men are needed for real investigation, and it is only reasonable to expect that conditions will be so shaped that we may make progress in that direction. The kind of men needed for investigators was defined by one speaker as "a man saturated with the things he is doing, and who shall not be turned aside and wearied by having to drill a class or do anything else but hunt his subject and the truth." Another speaker believed that teaching and investigating "call for a different attitude of mind and the use of a different set of faculties, to a certain extent, and that except in the case of unusually gifted men the same men are not likely to have both sides equally developed. An investigator should have his mind focused on his work more or less all the time," whereas the teacher's thought will be largely pedagogical.

Considered in the light of the extensive experience which has been had, the most that can be said for the dual arrangement, where any considerable amount of teaching is involved, is that it is solely a matter of expediency. Dividing the salary enables both the college and the station to carry a larger number of men on its agricultural staff, to differentiate its work more, and make a show of carrying a larger number of departments; but from the standpoint of real investigation the advantage of this increased number of half or quarter men in the station is decidedly problematical. The efficiency of a station is not measured by the fractions of men it has on its staff, and it must be said that some of the stations with the longest corps of workers on their roster have contributed least to the real advancement of agricultural science and practice.

Every station man should, if practicable, do some teaching or farmers' institute work, as a means of keeping his mind directed

toward the practical bearing of his investigations, and of enabling him to present them to students or farmers in an intelligible manner. But the amount should not be large or so arranged as to scatter his efforts. It should be of advanced character, and if so will naturally relate to the experimental work in hand and the results accomplished by the investigator himself and others in his particular department, together with their practical significance. Then it will not distract his mind from his work and will usually be helpful. But it must be admitted that the requirement of a large amount of elementary teaching is one of the weaknesses of our American station system, attributable to the lack of adequate funds to properly meet the rapid increase in demand for agricultural education, which has been greatly stimulated by the work of the experiment stations.

Considering the splendid work of the stations as a whole, and the potent and far-reaching influence they have exerted, not only in improving agricultural methods but in bringing about a better attitude of mind, any criticism of the returns they have rendered for the funds which have been at their disposal would be most unjust. The condition is to be taken rather as an indication of the pressing need of larger funds by both the agricultural college and the experiment station, to properly man the teaching force and to develop the department of agricultural investigation.

The former views regarding the needs of the experiment station have been modified in several important respects in recent years. The conference at Des Moines brought out the fact that a modification of the views regarding the dual function of the station worker is now clearly indicated, and that a considerable number of stations are moving as rapidly as opportunities permit in the direction of a station staff whose members shall be primarily station men. The well-nigh unanimity of opinion among station directors and workers, especially among those who are carrying on real investigation, should outweigh the theoretical claims which these fifteen years of experience have failed to realize upon. They should lead college presidents and boards of control to deal with this question as one of the most vital at present affecting experiment station work; and it is especially desirable that it be looked squarely in the face and considered impartially at this time, when plans are being made for the use of larger funds to strengthen and develop the station work.



Another line of discussion touching the experiment stations was the provision for extension work as a branch of the agricultural college. There was a more general recognition of the fact that the agricultural college logically embraces three distinct branches or departments of work, viz, the experiment station or research department, the department of instruction, and the department for extension work. President Butterfield declared that "to carry out the function of the agricultural college we need a vast enlargement of extension work among farmers," which should be dignified by a standing in the college coördinate with research and the teaching of students. It should rank as a distinct department "with a faculty of men whose chief business is to teach the people who can not come to the college."

Among the lines of work assigned to this extension department were included the farmers' institutes, reading courses, extension lectures, the carrying on of coöperative and demonstration experiments, the editing and distributing of such compilations of practical information as now appear under the guise of experiment station bulletins, and eventually relieving the station of the bulk of its correspondence.

It was frankly admitted that the compiled popular publications which the stations have been practically forced into issuing as a matter of protection of their time are not properly station bulletins, and create a wrong idea as to the character of work which the stations are putting out. Like much of the station correspondence, it was held to belong to the extension department. The demand for information and the personal inquiries have grown up with and out of the experiment stations, which have created a thirst among farmers for more up-to-date knowledge and for advice, which they turn to the station men to supply.

There was a strong sentiment voiced by a number of speakers that if the experiment stations are to fulfill in the highest degree the expectations which have been placed in them as agencies for research in agriculture—for adding to our fund of scientific knowledge and applying it to the practical problems in agriculture—they must cease to be all things to all men, they must be relieved of this great drain upon them, and allowed to devote themselves to their special field.

To meet this demand a special agency is needed for disseminating and demonstrating new discoveries and new methods; and

the extension department, which is already organized and in operation at Cornell University, and which exists in embryo at a number of other places, was confidently pointed to as one of the departments of the agricultural college of the future.

The interest in this movement was voiced by a resolution to secure if possible the granting of the franking privilege to the publications of the extension department, and thus allow them to stand for what they are, instead of distributing them under the cloak of bulletins of the experiment station. The expense of sending them out otherwise is now the only reason assigned for issuing them in the station series, and it was argued that the extension of the franking privilege to bulletins of this department of work would allow a clear and distinct differentiation of the legitimate work of the experiment station, and thereby complete the organization.

The resolution was ultimately withdrawn, but the interest with which it was discussed indicated how widespread is the feeling that the stations and their publications are being burdened with a class of material which is not strictly in their domain, and which a more complete organization of the college of agriculture should provide for in another way. It represented a very notable advance in opinion, and is a most encouraging sign of a broader and clearer conception of the respective functions and needs of agricultural instruction, agricultural experimentation, and agricultural extension, which combined to go to make up the agricultural college of the future.

It was recognized that in the case of many institutions the program is to some extent more ideal than practicable under present conditions. The change can not come all at once, but it will be something to work toward now that the need is more evident; and with the possibility of securing increased funds for agricultural work, which in many of the States is now exceptionally good, the realization of some of these ideals seems nearer at hand.

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The Farm Department is preparing for a series of coöperative experiments in different kinds of grain, to be carried on by county farms in many parts of the State. The seed is furnished by the department and the results will be reported to the College for tabulation. The seeds include twelve varieties of corn, three of oats, two of barley, two of spring wheat, and several varieties of Kafir corn, cane, and grass seeds.



## EDUCATION TOO EASY.

"THE basic defect in the American system of education seems to me to be that the American teacher does the thinking for the American pupil."

This comment came recently from a graduate of an English university, who, during ten years of successful experience as a teacher and tutor in different parts of the United States, has divested himself pretty thoroughly of insular prejudices and acquired a sincere admiration for many things American. It was made in answer to the query why the boy of fourteen at the English public school or the German gymnasium usually had a more thorough knowledge of Latin and mathematics than the average freshman in the colleges of this country.

"My eyes were opened," he continued, "by one of the first pupils I had in this country. He seemed to know algebra, geometry, trigonometry, and calculus. But he did not. I need not go into details. He was one of the boys who accepts the tables of logarithms as a sort of revealed mathematical religion. He had every rule and demonstration as pat as a prize parrot. He had 'been through' all those studies and I was tremendously puzzled about how he could seem to know so much about those branches of knowledge while his mind displayed not an iota of the development that inevitably follows their mastery.

"I was not entirely dazed, however, until I examined the text-book from which he had 'learned' calculus. It was a little volume, but all of calculus was there—seemingly. I felt myself an old fogey. My age had passed me by. I recalled my many months of stubborn wrestling with that study, and all the successive obstacles I had struggled over. Yet there before me was all made so smooth and plain and easy that any fairly bright boy should be able to gallop through it to a successful examination in sixty days. I still consider that text-book a work of genius. It is the only term to apply to the work of a man who can so putty up and glaze over every rough place as to make the rockiest path to knowledge look like a stretch of intellectual asphalt. But I still believe also that no boy ever walked over that smoothed roadbed to any intellectual goal, unless his bent of mind was such that he could not be content till he had stripped off the deceptive covering and hammered every stumbling-block out of his own way.

"Don't think I am assailing all American text-books. And,

above all, don't mistake my meaning to be an attack upon American teachers. No abler men or more admirable scholars are to be found anywhere than in the faculties of American colleges and universities. I am merely illustrating a tendency, which I believe to be a harmful one, to attempt the impossible construction of a royal road to learning. It is characteristic of the utilitarian civilization of present-day America. It saves time, but it does not give the student the power to reason and originate. In other words, I see on all sides an effort to make education easy. And education made easy does not educate.

"There are two sides to the question, naturally. The mechanical equipment of the American schoolroom—the relief maps, the botanical and zoölogical specimens, the accurately drawn and colored plates and all the improvements and facilities added in recent years to every class room, from kindergarten to laboratory—will arouse in every parent a feeling that is part admiration and part regret, as the memory is recalled of other school days when there were no such enticing aids to make the days of plodding less arduous. But if such excellent assistants are to be misused and made agents of a 'get-wise-quick' fallacy it is time to call a halt. Unquestionably such misuse is made when a teacher, setting a problem that involves a sphere and two chords, takes from his desk a glass ball pierced at different points and draws two wires through it at the proper angles. The pupil who cannot draw with compasses a line upon his paper plane that in his mind's eye is a perfect globe will be harmed, not helped, by all the glass globes ever blown.

"The 'pony' is the worst possible mount for the youthful traveler toward the mountain tops to knowledge. No human being ever learned Latin or Greek from an 'interlinear.' But no unbiased observer can be blind to the fact that the impatient American spirit, desirous of concrete results in return for the least possible expenditure of time and toil, is apparent in matters educational as in those industrial. The warning of the great English chemist, Sir William Ramsay, in his address to the Society of Chemical Industry in this city Thursday evening is timely, for his words apply universally and not only to his own profession:

"The education of a chemist must be conceived in the sense that it consists in an effort to produce an attitude of mind rather than to instil definite knowledge. In short, it is the inventive



faculty which must be cultivated. My contention is that most of the lads who enter a chemical laboratory are able to receive some inspiration or to have a latent inspiration developed which will fit them to become inventive chemists. Above all, not too much teaching. The essence of scientific progress is the well-worn method of trial and failure. It is simply horrible to think of the travesty of teaching in vogue in some of our colleges, where everything is provided, and where the students add one solution to another by word of command and record their results in special note-books constructed for the purpose. What do they learn? To obey? That should have been taught in the nursery. Manipulation? Manipulation consists in constructing what is required, not in using what is given. I had rather see a youth commit the *Æneid* to heart than carry out such time-wasting, soul-destroying routine operations. The first may result in stronger memory; the second is fatal to originality.'

"Evidence of the widespread acceptance of this false theory of education is on every hand. The enterprising and accommodating persons who agree to make any one a linguist in a month, or to furnish at will the mental equipment for a life-work in art or engineering by mail, merely give exaggerated proof that a supply will always be offered to a demand, however chimerical. These are merely phases of 'education made easy.'

"The parent who makes the mistake of sending a child to a school where education is made easy and the pupil is sailed smoothly through a superficial knowledge of many studies, attested by examinations that demand only memorizing of the textbooks, makes an error as greivous as the one who insists that the child be taught only such things as are of 'practical' value. Both mistake the meaning of education. Both act with futility as irreparable as if they were to substitute gentle massage for gymnastic work and the child's outdoor play. Exercise must bring fatigue and soreness before the child's frame can grow into symmetrical strength of bone, muscle, and sinew. It can be fed and pinched and patted into plumpness. But it is exercise only, taken regularly and gradually increased in severity under the guidance of skilled instructors, that makes the athlete. What is true of the sound body is true of the sound brain. 'Education made easy' can make only stunted or flabby minds."—*New York Mail*.

# THE INDUSTRIALIST.

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## LOCAL NOTES.

The Farm Department has been busy this winter hauling manure from town, for fertilizing grass plots.

Assistant Shosmith, of the Farm Department, was down with the grippe and unable to meet his classes last week.

Professor Walters and two of his students in architecture went to Topeka on Saturday noon to do some sculpturing in butter for the Mid-winter Pure Food Exhibition. They will return on Monday night.

Miss Bock, of Pittsburg, Penn., the elocutionist who trained the Manhattan Home Dramatic Association this winter, gave a short recitation in the Auditorium on Friday morning after chapel exercises.

Last Tuesday morning the College thermometers registered all the way from seven to thirteen degrees below zero. Winter in Kansas at this time of the year is a good deal like the Russian Baltic fleet—no one can say whether it is coming or going.

The concert in the Auditorium Saturday night, January 21, for the benefit of the Athletic Association, was a credit to the cooperating musicians. The audience was composed mostly of students, and only a fair attendance was present. The program was not sufficiently advertised in town to draw the down-town people.

During the latter part of the fall term a movement was begun, the purpose of which was the organization of a new literary society for girls. As a result of this movement the Eurodelphian society has been started. This is the first of the several new societies which will probably be organized as a result of the recognition and encouragement given to society work by the Faculty. The new organization begins its work with twenty-five members, the limit of membership being seventy-five. At present the meetings will be held each Saturday afternoon in the west society hall. The first regular meeting was held Saturday afternoon, January 14, at which time the constitution was adopted and officers elected. The following are the officers: President, Ethel Clemons; vice-president, Elva Akin; recording secretary, Arthie Edworthy; corresponding secretary, Grace Smith; treasurer, Lulu Rannels; critic, Lora Perry; marshal, Irma Davies; board of directors, Crete Spencer, Winifred Dalton, and Hallie Smith; program committee, Helen Huse, Jessie Marty, and Vena Holloway. The charter members are: Elva Akin, Ethel Clemons, Marie Coons, Katherine Cooper, Winifred Dalton, Irma Davies, Arthie Ed-



worthy, Grace Enlow, Louise Fielding, Winifred Hall, Boline Hanson, Vera Holloway, Helen Huse, Priscilla Lewis, Eleanor March, Jessie Marty, Ethel McKeen, Elinore Ober, Lora Perry, Lulu Rannels, Grace Smith, Hallie Smith, Crete Spencer, Leona Moore, Louise Fleming.—*Students' Herald*.

Dinners are being served by the second-year short-course girls to members of the Faculty and the assistants. Each girl has a table of four to attend. She provides exclusively to their wants, cooking and serving the meals. The program is varied from day to day so that all girls will get the required practice. The guests pay 75 cents per week for the dinners, which is sufficient to keep the pantry replenished with provisions.

The inter-society oratorical contest of the College will be held to-night, January 28, in the Auditorium. The contestants and their subjects are as follows: Franklin, Nora Hayes, "The Relation of Education to Morality;" Alpha Beta, W. R. Ballard, "The Crime of All the Ages;" Ionian, Bertha Cowles, "Our Heritage from the Past;" Webster, Jens Nygard, "A Plea for Organized Labor;" Hamilton, F. E. Balmer, "Political Conservatism."

Professor TenEyck and Assistant Shoemith are planning a grain-judging contest to take place some time in March, and a corn-growing contest to take place during the coming season. The contest will be open to teams of five members from each of the four College classes and one team from the short-course students. The corn-growing contest may be participated in by students or other interested parties. A circular will be issued soon, giving date for the judging contest and rules for both. A number of valuable prizes to be given to the winners have been donated by different firms. The list of prizes, together with the donors, is as follows: International Harvester Co., Chicago, Ill., Plano mower. Rock Island Plow Co., Rock Island, Ill., Tricycle riding lister. Fuller & Johnson Manufacturing Co., Madison, Wis., Victor two-row corn-planter. D. M. Sechler Carriage Co., Moline, Ill., Black Hawk two-row corn-planter. Emerson-Newton Co., Kansas City, Mo., Emerson balance frame cultivator. Kingman-Moore Implement Co., Kansas City, Mo., Kingman-Moore No Tip cultivator. J. D. Tomer & Sons Co., Mendota, Ill., one-horse surface cultivator. M. Cambell Manufacturing Co., Detroit, Mich., Chatham fanning-mill and bagger. Duane H. Nash, Millington, N. J., two Acme harrows. Dempster Mill Manufacturing Co., Beatrice, Neb., galvanized water-tank. C. E. Hildreth, Altamont, Kan., six bushels Hildreth corn or \$15 cash.

#### ALUMNI AND FORMER STUDENTS.

Ben F. Mudge [junior in '04], a son of J. B. Mudge, left Wednesday for Milwaukee, Wis., where on next Wednesday he and Miss Elsie Robinson [junior in '02], will be married. They will return to Manhattan and be at home to their many friends at the old Doctor Robinson home, north of Manhattan.—*Nationalist*, Jan. 20, '05.

*Good Housekeeping* for February contains an excellent likeness of Miss Abby Marlatt, '88, with a flattering notice of her work.

Lieut. Ned Green ['97], recently of 25th Infantry, stationed at Ft. Niobrara, Nebr., has been transferred to the 15th Infantry, stationed at Monterey, Cal. Lieutenant Green stopped in town to-day on his way to his new post. He went west this afternoon.—*Nationalist*.

C. D. Lechner, '99, and R. H. Haney, student in 1901, visited the College last Friday. Mr. Lechner was on his way to Excelsior Springs, Mo., where he has the contract for erecting a residence. He was much pleased with the Auditorium, which has been occupied since his last visit.

Edward C. Joss, D. V. S. of K. S. A. C. '96, who has been for some time inspector for the Bureau of Animal Industry of the United States Department of Agriculture at Troutdale, Ore., has been promoted to the position of chief inspector at the union meat market at Tacoma, Wash. He will make the change February 1. Mrs. Joss is best known here as Miss Miriam Swingle, K. S. A. C. '96, daughter of J. F. Swingle.—*Nationalist*.

Nicholas Schmitz, '04, is very pleasantly located at Forest Home, Ithaca, N. Y. He is studying for the Master's degree in soils and agronomy but realizes the importance of dairy and other animal industries in this connection. He expects to receive this degree next summer, but will probably remain at Cornell University much longer and take the degree of Doctor of Philosophy. He is very much interested in his work there, but sends a loud "Roar-e roar" and best wishes for K. S. A. C.

#### COMING FARMERS' INSTITUTES.

A number of the College and Experiment Station officers find a considerable addition to their other duties in attending Farmers' Institutes. These trips are often overlooked in compiling the local items, but it is proposed hereafter to maintain under the above heading a list of the appointments for that work. It is hoped that this will be a convenience to many, as well as an exposition of the extent of this kind of work.

- Feb. 1, Hutchinson, Professor Dickens and Dr. Barnes;
- Feb. 2-3, Lewis, Professor Dickens and Dr. Barnes;
- Feb. 2-3, Summerfield, Professors Calvin and Popenoe;
- Feb. 10-11, Burrton, Professor Erf and Assistant Eastman;
- Feb. 13-14, Arkansas City, Professor Erf and Assistant Eastman;
- Feb. 14, Sedan, Professor Erf;
- Feb. 16, Peabody, Professor Erf and Dr. Barnes;
- Feb. 16-17, Edgerton, Professors Calvin and Willard;
- Feb. 17, Lincoln, Professor Dickens;
- Feb. 18, Paxico, Assts. R. E. Eastman and G. C. Wheeler;
- Feb. 20, Belleville, Professor Erf and Assistant Shoemith;
- Feb. 22-23, Oneida, Professor TenEyck;
- Feb. 23-24, Norton, Professors Popenoe and Kinzer;
- Feb. 27-28, Randolph, Professor Willard and Assistant Wheeler;
- Mar. 1, Bucklin, Professors TenEyck and Erf;
- Mar. 3, Sedan, Professor TenEyck;
- Mar. 7, Frankfort, Professor Walters and Assistant Shoemith.



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# THE INDUSTRIALIST

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AGRICULTURAL COLLEGE

♦ ♦ ♦

*Editor-in-Chief,* - PRES. E. R. NICHOLS  
*Local Editor,* - - PROF. J. D. WALTERS  
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# THE INDUSTRIALIST.

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No. 19

## THE MAN BEHIND THE COW.

[An address by Ex-Gov. W. D. Hoard, editor of *Hoard's Dairyman*, Fort Atkinson, Wis., before the Kansas State Board of Agriculture, at Topeka, January 12, 1905.]

IF I were asked the old question in the catechism, "What is the chief end of man?" I presume I would be thinking of the *dairyman* and would answer, "The top end."

Sconondoa, the old chief of the Oneida Indians, in a speech at Albany, N. Y., when he was a hundred years old, said, "I am like an aged hemlock. The winds of a hundred winters have whistled through my branches—I am dead at the top." The figure of speech was a striking one, and most powerfully drawn from nature.

There is a wonderful similitude between men and trees. I was reared as a boy and youth in close contact with the Oneida Indians. My father preached among them and I learned to speak their language with considerable facility. One time at a great Methodist camp-meeting, I walked out into the deep woods with Thomas Cornelius, the head man of the tribe. He was a man of wonderful powers of thought. Pointing to the trees about him, he said: "You see all these trees; beach, maple, ash, elm, basswood, pine, hemlock. All different kinds of trees. No tree like other tree. No tree say to other tree, 'Why you no like me?' Basswood never say to hemlock, 'What you do all winter with summer clothes on?' Trees like it so. God made it so. Every tree mind his own business. Every tree grow on same ground. Every tree point up. Every tree, unless he be sick, grow up to see the light. He not care for sun on his feet; want it on his head. Why not men so good as trees?"

These were some of the lessons I learned from those untutored Indians. Do you wonder, then, that I say there is a great similitude between men and trees? But it took a hundred years for Sconondoa to grow "dead at the top."

I know plenty of dairymen who have not lived half of that time,

and they are too "dead at the top" to know it. Everything about their farms indicates that they have been dead to all thought and progress. They make no effort, take no time, spend no money, to give themselves life and understanding at the top. The "winter of discontent" has set in with them. There are signs that navigation is about to close. They afford the state they live in and the cause of agricultural progress no hope. They are joined to the idols they worship, and those are Indifference, Ignorance, and Poverty of Result. They are at inverse ratio with every impulse of improvement that is going on about them. They wear the worn-out mental clothes of the past generation; worn-out methods, worn-out farms, worn-out stables, worn-out cows, things musty and not sweet, rusty and not bright. In this environment of purpose and condition they exist, but do not live. Surely they are "dead at the top."

There is no hope or encouragement in contemplating this class of farmers. Their wives, children and cows appeal to us with a pathos that we cannot resist; but what can we do, my brethren? Disraeli said that "Even Providence could not provide against the unforeseen machinations of stupidity."

Every farmer, every farmer's son and daughter, ought to take pride in doing some one thing extra well. Horace Greeley once said, "The farm wife is the most self-sacrificing of all wives, and she should be given a chance to be proud of some one thing she excels in, if it is nothing more than a beautiful flower garden."

But this idea of taking pride in some leading product of the farm has great possibilities in it, in leading a man out of a grumbling narrowness up into the cheery quality of a "good man among men."

The Wisconsin *Agriculturalist* recently contained a short article that would be worth untold sums to the farmers of any state if they only really and truly believed in it. Here is one paragraph:

"Certain opportunities come to all farmers in common. By this I mean the chance to make yourself known for the superior quality of your products. It may be beef, butter, some particular breed of cattle, etc., but every farmer worthy of the name should strive to build up a reputation for his product that will insure a steady demand and increase profits."

The paper goes on to relate the case of a young man who thought he would take pride in cultivating improved varieties of



potatoes. Some of his neighbors laughed at him, but they should have been laughed at for their silly, narrow ideas. He went ahead, stimulated by a noble pride in doing something extra well, and now he is at the head of a large seed establishment.

We know of scores of farmers who make a specialty of producing various kinds of fine seed grains and advertising the same in agricultural papers. Others select some one breed of horses, cattle, sheep, swine, or fowls. There is plenty of room in any of them for the prideful man, but the man who is in it just for the money will soon get left. Good, honest pride is a safe leader, but mere greed for gain will soon lead a man to cheat himself.

We need a great many more prideful farmers. I never yet saw a dairyman proud of his dairy but he made money—handsome money. Pride will lead a man to do the things he should do to make a success of it.

We were once urging a number of farmers to read more on the chemistry of feeds. We said: "Every dairy farmer in particular ought to be well posted on the chemical analysis of the feeds he gives his cows." We saw a look of incredulity pass over their faces, and one of the number said: "What use can I make of chemistry?" We replied that it would help him to discriminate if he bought feeds, and much the same if he fed grain or forage that he raised himself. He rather boastfully declared that he knew all he wanted to know about what was good to feed. We then asked him which was worth the most in his local market, clover or timothy hay. He answered "Timothy." "Well, if you were going to buy hay for your cows, which would you take?" His reply was: "Well, if I wanted the best hay for the money, I would take the timothy, for it sells for more in the market, and the market knows which is best." We then informed him that chemistry tells us that the clover contains more than double the food value that timothy does.

Timothy has only three pounds in a hundred of digestible protein while clover contains eight pounds and six-tenths of a pound. Here is where the market does not agree with chemistry, and, furthermore, the cow seems to agree with the chemist, for she will make more butter out of clover than from timothy, pound for pound.

The rest of the group seemed to take considerable interest, and the following questions and answers were had:

Question. What rule do you follow in buying feed for your cows?

Answer. I am very largely guided by the proportion of protein that chemistry tells me a food contains. As a rule I find the highest priced feeds, such as cottonseed-meal, linseed meal, gluten meal, and dried brewers' grains to be the cheapest. The price per ton cuts something of a figure, but not as much as many imagine. I like to feed a little bran to cows, horses, and young cattle, but it is fed mainly as a conditioner."

Q. Will you explain your rule?

A. Certainly. Consider the following facts: You buy these feeds for the protein that is in them. The needed carbohydrates, or starchy foods, you can easily raise on the farm in the form of corn, corn-stover, or fodder, timothy hay, straw, etc. But the protein which the cow must have is expensive. You ought to consider, then, that the vital question is *the most protein for your money*. Chemistry will reveal that to you. In a ton of bran there is 240 pounds of protein. If you pay \$15 a ton for it, you are paying  $6\frac{1}{4}$  cents a pound for protein. If you pay \$19 a ton you pay 8 cents and a fraction over, per pound, for the protein. Gluten-meal contains 500 pounds of protein to the ton. If you pay \$26 a ton for it you are paying  $5^2$  cents a pound for the protein. Which is the cheapest protein, that in the bran or gluten-meal? Ajax Flakes, or dried brewers' grains, of a good quality contain 30 per cent protein, or 600 pounds of protein to the ton. At \$24 a ton you are paying 4 cents a pound for your protein. In which is the protein the cheapest, in bran or Ajax Flakes? Cottonseed-meal contains 38 per cent protein, 780 pounds to the ton. At \$28 per ton you are paying a fraction less than  $3\frac{6}{10}$  cents a pound for your protein. Which do you think is the cheapest, the cottonseed-meal at \$28 per ton or the bran at \$19, or even \$15 per ton?

I then took occasion to ask them why they could not know these things just as well as I. They can read and make a study of such principles. There was not a man in the group but what spends ten times as much every year for beer as he does for those books and papers that treat on such subjects. Our farmers are just in the primer class in this important question of making themselves competent to administer their own fortune. Here and there you will find a farmer who stores his own mind with sound knowledge.

The men behind the cows are poor judges of cows or they would



not continue to keep the cows they do, or else they would keep them well enough to make a profit on them. There is some awakening among them as to the value of better blood and more intelligent methods of developing the dairy cow, but the great majority breed without study or wise judgment. It is a somewhat rare thing to find in any neighborhood of dairy farmers one who has been pursuing for years a steadfast grading up of his cows; one who has taken hold of settled principles and worked them up to a highly profitable result. There are thousands who keep cows, but how many do you know who skilfully develop cows?

And yet the light is breaking into the minds of farmers on this question. They are beginning to see and apprehend that there are two prime factors that lie under the making of a dairy cow—breed and feed. Neither will take the place of the other. Each must do its own work well or there is failure. Of the two, the breeding factor is much the most difficult to comprehend and control. The average farmer is mighty on cross breeding; as a consequence his herd is a hodge-podge. The real student keeps within the line of established potencies, and develops by the addition and combination of *agreeing*, not disagreeing, traits and tendencies.

I have been thinking, preaching and practicing what I believe to be the best known truth in dairy farming for thirty-four years in Wisconsin. I have watched the advance of knowledge and better judgment on the part of the farmer, in my own and other states, very closely all these years. In all this time I have seen the farmer forced out of his conservatism in one place and then another. All the time he has been declaring and protesting that the change was not right; that we don't need to do things this way in our state (Kansas for instance); that my father didn't handle his cows or feed his cows or stable his cows that way; that all these changes and so-called improvements are useless and of no account. All this time have I seen so much of this unwilling compliance with better thoughts and ways, like dragging a cat by the tail to her dish of milk, that I have come to expect it as a matter of course. It reminds me of what I once heard an old negro preacher say to his congregation, down in Mississippi. He had become somewhat discouraged over their slow progress in better living. Throwing his spectacles to the top of his head, he exclaimed with a monitory shake of his long forefinger: "If de Lord

ebber gets you into heabben, He's done got to tie your legs and frow you dere by main force."

I am saying this, not alone from a Kansas standpoint, but from a Wisconsin standpoint as well. If we have made progress in better ideas, better methods, better soil, better cows, better creameries, and finally better men behind the cow in Wisconsin, it has been due to a few men and not to the mass of farmers.

These few men organized themselves into the Wisconsin Dairy-men's Association in 1872. Practically speaking, at no time has there been more than a score of these men. They have worked together without disagreement, without jealousy, without politics, and not enough of religious difference to amount to anything. From out of their thoughts and constant suggestions has the way opened, has come all the progress we have made. They suggested and pushed forward the dairy school, the first in the land. They next established the farm institutes, and next a short course in the College of Agriculture. Now they are pushing, as fast as they can, the establishment of county agricultural schools and county training schools for teachers in the country district schools, where they may be trained to teach the elements of agriculture in a truthful and not mistaken way to the boys and girls of the farm. We are going to have, if we can get this conservative farmer to consent, a coming generation of young men trained in the district school to know the truths of agricultural science in an elementary way, just as they know elementary arithmetic, or grammar, or geography, or physiology. What we are after, if possible, is to get a generation of farmers in Wisconsin who will gladly stand with their faces to the light that knowledge brings, who will move forward by virtue of their own initiative.

What we are after is to develop a future race of farmers that shall stand before the problems of the farm and society as strong men intellectually, as do the lawyers before the problems of the law, or the manufacturers before their problems, or the railroad men before their problems. The problems of the farm are deeper, wider and higher than all other problems, for everything must primarily come from the soil. The lawyers do not believe it, the manufacturers and railroad men, with their combined combinations against the rest of society, are contemptuous of it; the educational forces have never organized for it, for the farm intellect is not an ideal intellect with them as yet.



But the man of all men who opposes most the march of progress for his own enlightenment is the farmer, and the development of his class to a front rank in the world of thought with all other men is the farmer himself. He it is who blocks the way with a spirit of conservatism that hinders and discourages and, in the end, makes him a slave to his own folly and the larger intellect of the better educated classes. He does not see that the greatest theatre for intellectual power and understanding is the farm. He must first master that problem before he can take his rightful place among other classes of men. We must become better farmers before we are entitled to respect as better citizens.

You do not see the weak lawyer, or manufacturer, or teacher, or editor, become a leader among men. Advancement everywhere is based on comprehension. If we are weak in our comprehension as farmers, we are weak everywhere. There is no escape from the working of that law. And it is because of our weakness as farmers, our inadequate comprehension of what the farm is, of what we are and what we should become, that we stand so weakly before the dangers that threaten our citizenship, our liberty, and our country. May I not ask as did Patrick Henry, "When shall we be stronger?" That question every farmer must consider for himself. He must face the truth about himself, for only "the truth shall make him free."

Not long since an unwilling farmer said to me: "I like politics, but confound the cows." His cows and his farm showed that. He was a poor dairy farmer, and as a consequence a flimsy, slack-twisted politician. Another sold his farm and moved into town, going into the grocery business. It took him two years to strike bankruptcy, with marked success. Had he been a thorough, systematic farmer, it would have given him the mental training concerning business which he lacked. There is no better school on earth than the dairy farm, with all its vegetable, animal, mechanical and commercial problems, to fit a man for safe comprehension in other affairs, if he would but know it. How many farmers do you know who look on farming in that light? It is a light that would illumine, if farmers would only let it shine into their minds and hearts.

The more I study the situation on the average dairy farm in New York, Kansas, Wisconsin, Nebraska, or anywhere, in fact, on this continent, the more I am amazed at it.

First, I am amazed at the agricultural press, at their silence, supineness, unwillingness to take hold of the farmer and tell him the truth concerning the way he is sacrificing himself, his life, his wife and children and the fertility of his soil, by stupid ways of doing things. The agricultural press almost universally seem afraid to strip off the cover and call things by their right names. The farmer lacks mental training and knowledge, sufficient to see what he is doing and how he is doing it, and the press is afraid to tell him so.

The dairy farmers of this country are wasting millions of dollars a year by ignorant ways of handling their cows, and scarcely anybody stands up and dares boldly to tell of it. *Hoard's Dairyman* is the only paper in the entire land that has instituted an extensive cow census investigation to show up the actual facts at the farm end; to show how much one man's ignorance is costing him and how much profit another man's intelligence is bringing him. But, bless you, the *Dairyman* is not read by one man in a thousand who keeps cows. How little it can do to turn light into dark places.

Second, I am amazed at the contented indifference manifested at this widespread loss by the agricultural colleges of the land. I know of but one such college—that of Illinois—that has put a man into the field and devoted special effort to showing up to the farmers the actual condition they are in.

Third, I am amazed at the low state of practical cow knowledge among farmers, which these census investigations show. It is hard to make men believe the facts, as they are thus brought out to the effect that there are so few good cows; that there is such widespread determination among farmers not to believe the facts, and not to apply them when they see them; that such a great number, fifty per cent at least, in nearly every creamery or cheese factory community, pay no attention whatever to making themselves intelligent enough to secure a better profit from their cows.

Fourth, It is amazing that three-fourths of the cow farmers, wherever these investigations have been had, and they number over a thousand farms and farmers in Vermont, New York, India io, Pennsylvania, Iowa, and Wisconsin, should have no idea that their lack of profit is due to their own lack of the right kind of cow knowledge.

In whatever state we go, we find a condition of darkness that



is fearfully discouraging. And what makes it worse, you cannot convince one of these men who is losing twenty-five cents on every dollar he invests in feed, that he is not one of the best dairy farmers in the neighborhood.

I have gone to men by the score, who are keeping forty per cent of their cows at an actual loss, and I could no more convince them of that fact than I could move the earth.

Take the situation as it actually exists in Kansas. How many of the farmers who own cows and depend on them for their cash revenue are what might be called up-to-date, intelligent dairymen? How many of them give any evidence of that fact by making energetic effort on their farms towards dairy improvement? Take all the literature, all the investigations, all the personal experience of good men with cows that has ever been published, and what per cent of the cow farmers in Kansas are readers and thinkers on dairy subjects? The cow census investigations show that not one-third of them feel any desire or hunger to read such literature. They will read story papers, political papers, but they will not put their minds into the light of sound dairy knowledge.

A creamery man in Wisconsin who has one hundred twenty-five farmers as his patrons recently found that a number were losing their best cows with milk fever. He was a reader of the *Dairyman* and other papers, and had noticed for two years past a large number of articles on the air cure of this disease. He commenced speaking to these men about it and to his amazement he found that but two of the one hundred twenty-five had ever heard of it. He then read to them how twenty-nine of the Jersey cows at the great cow demonstration at the St. Louis World's Fair were taken with this deadly disease and every one saved by the simple device of pumping the udder full of air. Then he addressed them in about these words: "Why don't you keep posted on these things? Why don't you take some paper that will inform you on such important matters? Do you think you are making money by keeping your minds dark on this and other important items of dairy knowledge?" Seven cows, and they are always the best ones, worth at least fifty dollars each, had died, and yet these men were in blank ignorance of what every well-posted dairy farmer had known about for some time. All that was required to give them immunity from the disease was a bicycle pump, twelve inches of small, rubber hose, and a milking tube. Some man

once said, "A miss is as good as a mile." "Yes," said another, "and to the man who knows nothing about it, the miss is as far off as the mile."

I use the milk-fever incident to illustrate how important knowledge in that and other respects is a mile away from the great mass of dairymen, and yet they seem to "chew the cud of sweet and bitter fancy" as contentedly as a cow out of the wind on the south side of a barn in the sunshine.

Every mechanic, every professional man, every manufacturer, succeeds or fails in proportion as he does first-class work and then does enough of it. All successful men in every calling have carried a high ideal in their minds as to the quality of the work they turned off. A poor lawyer is one who does poor, botchy, work. He never carries a finished ideal of how his work should be done. All he is after is pay.

Consider the hired man. You will tell me at once that a poor hired man is one who never cares how his work is done if he only secures the pay. What is the matter with that man? He carries a low ideal of how work should be done, of justice to his employer, of honor to himself, and the reputation he is to sustain among men. He has no mind for his work. He sees no high, fine, engaging possibilities in it.

Did it ever occur to you that possibly he had never worked for a man who saw those things, who carried those ideals of fine farm work in his mind and worked them out? I have had several hired men of various races and breeds of men. I never had but one in whom I could not arouse an enthusiasm in the various problems he saw being worked out around him. Several of these men had read scarcely a word of farm literature. Now they have an intellectual hunger for such reading.

What are you going to do with a man who has no spirit, no mind, no ambition, no mental hunger to know those things that lie beyond him and all about him? Then reflect that there are thousands upon thousands of farm homes and thousands upon thousands of farmers, yea, many of them pretending to keep cows, who are just that sort of men. Into their minds, shines none of the larger, better light. They are dealing with all the mysteries, the wonders, the powers of soil, of plant life, of animal life, around them, without a single spasm of mental hunger to know what it all means, and by that knowledge take larger advantage to themselves.



Can you wonder that we have poor, unambitious hired men, poor, ill-bred, ill-fed, unprofitable cows, worn-out soils, and an impoverished country, wives discouraged and sons and daughters fleeing to the towns, when the farmer himself carries such a low ideal of himself and what his calling is and what it means?

You can hardly estimate the power of a high ideal in the mind, on the fortunes of any man. The man behind the cow is behind all that is possible in the highest expression of dairy farming. Don't think that I am talking in favor of extravagance or vanity, or a lavish outlay for foolish pride. I am not looking at the farm of some rich man who has made a fortune in stocks or railroading and gone into fancy farming. He is no ideal for me. I am looking for the farmer, maybe on only fifty acres of land, who carries an intelligent ideal of perfect work in the kind of cow he produces; in the kind of stable he keeps her in; in the way he handles that cow and how he feeds and cares for her; in the way he confronts the problems of breeding and developing a fine cow; in the fine, skilful way he rears a calf; in the way he does a thousand things that lift him out of the low places of ignorant, stupid contact, up into the realm of kingship among men. Mind you, it is not wealth that marks the measure of the farmer. It is the amount of mind and the force of intellect he puts into his work as a farmer. They had serfs in Russia, men who had no mind to put into the rude tillage of the soil. The edict of emancipation did not change their mental condition. They are still serfs in effect.

The government of the United States emancipated the negro, but all the proclamations in the world could not emancipate his intellect and make a good farmer of him. A good farmer cannot be made by love of money. Mere greed of gain confers no enlightenment. How many do we see who love money so greedily that they can see no other way to make it except by pinching it out in the most painful and hindering way. Over the doors of the University of Virginia, Jefferson wrote these great words of Jesus Christ: "Ye shall know the *truth* and the *truth* shall make you free."

The poorest man, the least educated man, may, if he will, refresh and invigorate himself at the fountains of agricultural truth. The means of knowledge are all about him. All that is required is that he shall commence exercising his mind, commence forcing his thoughts over into the field of inquiry where other men of intellect are at work.

We can never restore the fertility of worn-out farms until we can get the farmer to use his thought. We must get him to make a study of the principles of fertility. We can never get him to improve the quality and capacity of the cows he keeps until we can get him to see the meaning of a dairy cow, the principles of dairy breeding.

There is no lack of opportunity, no lack of a chance to commence to do the things that make for regeneration. There is no lack of good, handsome profit if we will but see the commercial principles involved and force ourselves into obedience to those principles.

To illustrate: I know of thousands of farmers, I might say, who are keeping cows for the privilege of a bare existence of both cow and owner. Is there any lack of hard work? No! Right beside them in the same creamery or cheese factory are men who are making from 100 to 600 per cent more net profit out of the business than they are. What is the difference in the men? The first are trying to do a thousand dollars worth of work with fifteen cents worth of brains. It can't be done. They have the brains, but they won't invest them. A boy was asked if his father was a Christian. "I guess so," said the boy, "but he hasn't been working at it much for a good while."

I see this crying need for more brains, better understanding, clearer ideas of the meaning of things I am doing or trying to do. I see it daily on my own farm. I see it in the lives and constant disappointments of my neighbors. But the difficult thing for them and me to do seems to be to rouse our minds to a sense of the value of more study, more mental effort. Farmers are wasting their lives away, wasting their soil away, because of a lack of knowledge they ought to have.

One man in ten or fifteen only among the cow keepers of the land reads and thinks on these things. Think of such a low state of knowledge among these men on the things they ought to know. They pay every year a fearful tax for this unwillingness to put their minds at work as well as their hands.

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Assistant G. C. Wheeler has an article on "Economical Production of High Class Beef and Pork," in the *Kansas Farmer*, and Assistant V. M. Shoesmith an article on "Practical Methods of Corn Breeding," in the same paper and in the *Farmers' Advocate*.



# THE INDUSTRIALIST.

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## LOCAL NOTES.

Mrs. Hofer and daughters are pleasantly located at 4606 Indiana Avenue, Chicago. Their telephone number is "Gray, 1002."

Representative W. F. Peter, accompanied by D. E. Deputy, J. B. Anderson, and Mayor George T. Fielding, inspected the various departments and attended chapel exercises at the College last Saturday.

Miss Erma Gamon, a College student, was severely burned about the face while starting a fire in a heating-stove at her room. She poured coal oil on the kindling, and there being a hot bed of coals yet in the stove, a gas was formed which caused a slight explosion.

Engineer Jacob Lund says it took from twenty to twenty-five tons of coal per day to feed the Molochs of the furnace room last week. From three to six men worked constantly shoveling fuel, cleaning flues and extracting ashes, and several teams were required to haul the coal from the U. P. R. R. freight tracks.

The Manhattan Dramatic Club gave an entertainment last week in the opera-house, for the benefit of the city library. The acting was excellent and drew favorable comments from all who saw it. The net proceeds to the Library Association were about \$100. Several graduates of the College assisted in the play and Professor Valley and Assistant Brown furnished the music.

At the inter-society contest at the College Saturday evening, F. E. Balmer, of the Hamilton society was given first honors; W. R. Ballard, Alpha Beta, second; and Jens Nygard, Webster, third. The judges on delivery were Judge Kimble, Miss Laura Ewing, of the Topeka high school, and C. Y. O. Pugh, of Kansas City; on thought and composition, Mrs. Porter, of Baker, Baldwin; Professor McEachron, of Washburn, Topeka; and Superintendent Gerardy, of Smith Center.

The Horticultural Society held its monthly meeting at Horticultural Hall January 26. President Dickens read a paper on "Planting Nursery Stock," which was well received and generally discussed. J. B. Haney read a paper on the "Organization and Purpose of the Fruit Growers' Associations," which was also discussed with much interest. S. J. Norton told in his inimitable way what he knew about how to improve the Horticultural Society. Reports upon future crop prospects were withheld, no one venturing to report peaches killed.

Manhattan will get a gas plant before long. Geo. W. Alt, of Chicago, president of a gas construction company, has been in Manhattan a few days consulting with the members of the Manhattan Gas Company with reference to their plant here, and Hon. John Hessin is now in Chicago to study the financial problem.

The excessive cold weather of the past three weeks has been hard on the students and Faculty. There were many absences from classes. Several members of the Board of Instruction missed one or more days on account of serious colds or the collective ills resulting from exposure. Among these were Professors Roberts, Erf, Kammeyer, Remick, and Valley, Superintendent Lund, and Assistants Shoesmith and Pancake. All have recovered and are at their posts.

One of the exhibits that is attracting a great deal of attention at the Mid-Winter Pure Food Exhibition is the butter statue designed and modeled by Prof. J. D. Walters, of the Kansas Agricultural College, assisted by two students of the architectural course of the College. This large piece of modeling represents a polar bear in his den. The bear is seven feet eight inches high and weighs four hundred forty pounds. Professor Walters did a part of the designing of butter statuary at the World's Fair.—*Topeka Daily Herald*.

Professor Erf is making arrangements to take the students in stock judging to Fort Riley, February 22. Captain Short, of the 13th Cavalry, has extended the invitation and will give the students a chance to inspect the stables and equipment and judge a class of light horses. He will also give a demonstration of his methods of training, as well as an exhibition of horsemanship. Fort Riley has the finest riding hall in the United States, and usually gives exhibitions such as are seen in first-class circuses. The Wolff Packing Company has also invited the class to Topeka, where a demonstration of killing and butchering and the general features of meat packing will be given. Those interested in the dairy industry will be given a chance to visit the Continental Creamery Company and the Topeka Pure Milk Company.—*Students' Herald*.

#### COMING FARMERS' INSTITUTES.

- Feb. 10-11, Burrton, Professor Erf and Assistant Eastman;
- Feb. 13-14, Arkansas City, Professor Erf and Assistant Eastman;
- Feb. 14, Sedan, Professor Erf;
- Feb. 16, Peabody, Professor Erf and Dr. Barnes;
- Feb. 16-17, Edgerton, Professors Calvin and Willard;
- Feb. 17, Lincoln, Professor Dickens;
- Feb. 18, Paxico, Assts. R. E. Eastman and G. C. Wheeler;
- Feb. 20, Belleville, Professor Erf and Assistant Shoesmith;
- Feb. 21-22, Rome, Professors Popenoe and Walters;
- Feb. 22-23, Oneida, Professor TenEyck;
- Feb. 23-24, Norton, Professors Popenoe and Kinzer;
- Feb. 27-28, Randolph, Professor Willard and Assistant Wheeler;
- Mar. 1, Bucklin, Professors TenEyck and Erf;
- Mar. 3, Sedan, Professor TenEyck;
- Mar. 7, Frankfort, Professor Walters and Assistant Shoesmith.



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| Miss Maud Coe, B. S. (K. S. A. C.).....                                 | Assistant in Domestic Art                   |
| Roscoe H. Shaw, B. S. (N. H. C. A. & M. A.).....                        | Assistant Chemist, Experiment Station       |
| Theo. H. Scheffer, A. M. (Cornell University).....                      | Assistant in Zoölogy                        |
| Miss Kate Tinkey.....                                                   | Assistant Librarian                         |
| Earl N. Rodell, B. S. (K. S. A. C.).....                                | Assistant in Printing                       |
| Miss Caroline Hopps, Ph. B. (University of Chicago).....                | Assistant in English                        |
| Miss Helen Thompson, B. S. (K. S. A. C.).....                           | Assistant in Preparatory Department         |
| Miss Ella Weeks, A. B. (U. of K.).....                                  | Assistant in Drawing                        |
| Miss Flora Rose (Framingham Mass. Normal).....                          | Assistant in Domestic Science               |
| Miss Clara Pancake, B. S. (K. S. A. C.).....                            | Assistant in Domestic Science               |
| R. F. Booth, B. S. (Northwestern).....                                  | Assistant in Mathematics                    |
| Geo. C. Wheeler, B. S. (K. S. A. C.).....                               | Assistant in Feeding Experiments            |
| Miss Florence H. Vail, B. S. (K. S. A. C.).....                         | Assistant in Chemistry                      |
| Robert E. Eastman, M. S. (Cornell University).....                      | Assistant in Horticulture                   |
| Miss Daisy Zeininger.....                                               | Assistant in Mathematics                    |
| Roy A. Seaton, B. S. (K. S. A. C.).....                                 | Assistant in Mathematics                    |
| Hernon C. Kyle, B. S. (K. S. A. C.).....                                | Assistant in Agriculture                    |
| George F. Freeman, B. S. (Ala. Polytech. Inst.).....                    | Assistant in Botany                         |
| M. Francis Ahearn, B. S. (Mass. Ag. Coll.).....                         | Foreman of Greenhouses                      |
| Fred C. Nicholson.....                                                  | Foreman of Blacksmithing                    |
| Chas. S. Dearborn, B. S. (K. S. A. C.).....                             | Assistant in Mechanical Engineering         |
| Miss Cecilia Augspurger.....                                            | Assistant in Music                          |
| Charles W. Melick B. S. (Neb.).....                                     | Assistant in Dairy Husbandry                |
| Robert J. Foster, D. V. M. (Cornell).....                               | Assistant in Veterinary Science             |
| Miss Alice Loomis, B. S. (K. S. A. C.).....                             | Assistant in Preparatory Department         |
| Miss C. Jeanette Perry, B. S. (K. S. A. C.).....                        | Executive Clerk                             |
| Miss Alice M. Melton, B. S. (K. S. A. C.).....                          | Clerk in Director's Office                  |
| Miss Sarah Hougham, B. S. (K. S. A. C.).....                            | Clerk in Botanical Department               |
| Charles Hughes.....                                                     | Secretary to the President                  |
| William R. Lewis.....                                                   | Janitor                                     |



# THE INDUSTRIALIST.

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## PUBLIC SPEAKING.

THAT public speaking as an art has deteriorated is an opinion quite commonly entertained; and to support this view, it is pointed out that there are no Websters, Clays, Henrys, Burkes, Mirabeaus or Chathams in the public service of any country to-day. Both pulpit and bar, it is also asserted, have suffered a like decline. What pulpit orators of to-day can be classed with Bossuet, Savonarola, Spurgeon, Beecher, or Simpson? Where are the Choates, Currans, Erskines and Ciceros of the law? According to some critics, it would seem that eloquence is inversely proportional to the lapse of time since Demosthenes drove Æschines from Greece by the power of his eloquence. Perhaps these same critics are in harmony with others who maintain that the value and merits of a painting or a statue depend largely upon its antiquity; and with others, in still another field of criticism, that the modern drama can never hope to produce another Shakespeare.

In this as in all discussions, extreme views are plentiful. Perhaps it would be stating only the other extreme to say, that in public speaking, as in all other fields of human endeavor, the world is greater and better to-day than it was yesterday; that it would be a travesty on modern civilization to say, that we have not in everything added to or improved upon the heritage of past ages.

Without adopting the extremes of either view, or presuming to decide for others in a case where doctors disagree, we shall limit ourselves to a brief consideration of the conditions under which public speaking is most effective; and from these premises each may draw his own conclusions as to the relative greatness of orators past and present.

While the oration, as the highest type of public speaking, presupposes certain conditions that must always be satisfied to insure its classification as such, some of these conditions, particularly those which are under the control of the speaker, also enter

into other forms of public speech. The discussion which follows, therefore, may be considered relevant to every form of public address, rather than to any one type.

The success or failure of an oration is measured by the effect it produces. If the speaker succeeds in dominating the will of his hearers, he is an orator. If he can not do this, he may still be a forceful speaker, a brilliant lecturer, or a pleasing entertainer, but not an orator. Webster covers the whole ground when he says, speaking of oratory, "— it is something greater and higher than eloquence: it is noble, sublime, God-like action."

Three conditions determine the effective delivery of an oration: (a) the occasion, (b) the character of the audience, (c) the qualifications of the speaker. A few examples from history will strengthen this proposition. When Pope Urban II, at Clermont, made his appeal to the French to deliver the Holy Sepulcher from the hands of the Mohammedans, all three of these conditions were present. The occasion, *i. e.*, the object, was one of tremendous import to the deeply religious sentiment of the time. For centuries devout Christians had been making pilgrimages to the holy places in and about Jerusalem. Nothing was considered to be both so great a privilege and so pious an achievement as to kneel in prayer at the tomb of Christ or in the garden of Gethsemane. To the simple, sincere people, into whose worship symbols, relics and holy places entered so largely, nothing could be of greater moment than to keep intact and inviolate the soil and places made sacred by the footsteps of the gentle Nazarene. When now a faction, irreconcilably hostile to the Christian pilgrims, gained control of the Mohammedan world, it can readily be seen how seriously Christian Europe was affected by the change. Pilgrims were subjected to every form of insult, torture, and death; and, what was worse, the holy places were wantonly desecrated in a manner most shocking to Christian piety everywhere. Such was the occasion which came to Pope Urban.

The audience which came together at Clermont to hear him was composed of warm-hearted, impulsive Frenchmen. They contributed unconsciously, as does every audience, their share towards creating the second condition above mentioned. Deeply interested in the subject, but helpless and undecided as to what should be done, they were waiting for the touch of the master hand that should quicken them into definite, purposeful activity.



Then comes the man. Master of his subject and of the art of expression; clear in his own mind as to what should be done and how best to do it; on fire with enthusiasm for the object in view, but keeping himself under perfect control; free from every selfish motive and the pomp of declamation; oblivious of every purpose save the one to reach the will of his people, he delivered an oration which, measured by its far-reaching efforts, is unparalleled in history. How his audience rushed forth with frantic zeal to carry out his will, now theirs also by the power of his eloquence; how this initial force set in motion a series of crusades that extended through two centuries; how kingdoms rose and empires fell; how Europe became enriched by contact with eastern learning, industry, and commerce; how the zone of the known world enlarged under exploration and discovery, are all traceable directly or indirectly to the initial effect of this one oration.

History abounds in other examples. When Webster delivered his famous reply to Hayne, these three conditions were also fulfilled. The occasion was one in which every American citizen was vitally interested. The question of states-rights, whose settlement involved the possibilities of war and even the rending asunder of a nation that had a common origin and ought to have a common goal, was one which had grown more intense as time passed. His audience was composed nominally of the United States senate and such a small number of citizens as could find room in the galleries; but in reality millions of his countrymen were potentially the audience he swayed. Perhaps one-half of them differed from him in their convictions. They were all equally interested in the question on one side or the other, and ready to hear the message; but the task of winning them over to the principle of federal sovereignty was his. To what extent Webster himself fulfilled the third condition—the personality of the speaker—there can be no difference of opinion. Measured by its effect, it may be said that this oration contributed largely to the postponement of the civil war; and that adherence to the fundamental principles he enunciated—liberty *and* union—gave victory to the north and greatness to a re-united people.

Demosthenes De Corona, Cicero's orations against Verres and Catiline, Burke's Impeachment of Warren Hastings, Grattan's Declaration of Irish Rights, Beecher's speech at Liverpool and Patrick Henry's Address to the Virginia Assembly are notable

orations and addresses all of which satisfy the three conditions previously discussed. The history of oratory abounds in many other examples.

Of the three conditions mentioned, it is apparent that only the third one is created by the speaker and therefore wholly under his control: that is, his own personality, his mastery of the subject, and his general and special preparation to take advantage of the occasion as it arises.

The audience, supplying the second condition, is independent of him and often antagonistic; in which case his victory is all the greater. In one respect only must there be a common interest between them, and that is, in the subject. Their viewpoints, of course, may differ, and usually do. An audience, in order to contribute its share towards creating the conditions favorable to the delivery of a great oration, must be drawn together not so much by the personality of the speaker—as is the case where a popular lecturer or entertainer appears—but rather by a vital interest in the occasion.

The first condition, namely the occasion, is supplied by neither audience nor speaker. It simply presents itself; it grows out of the social, economic or religious forces operative during any period of time; and the oration which it calls forth will vary in greatness directly as the magnitude of the occasion and the number of people whose interest is involved. (It is assumed, of course, that the man ready to meet the occasion is present.) In other words, given a great occasion, a great audience and a great personality, there will follow, as effect upon cause, a great oration.

It follows, furthermore, that truly great orations are not more numerous than great events in history; and that a comparison of orators and orations, to be fair, must be based upon all three conditions, and not solely upon rhetorical merits as they appear in cold type.

Men—some men—may make themselves orators potentially by careful study and training, but unless the occasion comes, their public utterances will never be classed as orations by those who use this term with discretion. Abraham Lincoln understood this, when, as a lad, by the flickering light of the fireplace, he pored over his books on the cabin floor. He said to himself, "I will study and get ready; perhaps the opportunity will come." It came.



While it thus appears that oratorical honors are vouchsafed to but a few in each generation, almost anyone may acquire, with study and practice, the art of expressing his views before an audience in a pleasing, intelligent and forceful manner; and to do this it is necessary to conform to certain rules and principles that have grown out of the experience of the best speakers, and which are not diminished in value because they are also found "in the books."

In an article like this it is possible to give merely an outline of what may be called the fundamentals of public speaking. There are two means of expression at the command of a speaker, both of which must be used to insure effectiveness. They are (a) physical and (b) vocal.

Under physical means may be grouped bearing, attitude, gesture; under vocal means, time, inflection, tone-quality, and force. These admit of many divisions and sub-divisions, but, fundamentally considered, they cover the whole field. They are the principal means upon which a speaker must rely to express each of the four general types of utterance into which all subject-matter may be divided, namely, the formulative, which appeals to the perceptions; the discriminative, which appeals to the reasoning powers; the emotional, which appeals to the feelings; and the volitional, which appeals to the will. No one will suppose that the thought to be expressed is subordinate to these means of expression; yet no successful speaker will underestimate their importance. Neither is it safe to conclude that the physical are subordinate to the vocal. The speaker's personality is under the constant criticism of the Argus-eyed audience. Not a single pose, movement, or even detail of dress escapes its attention, and they are quick to place their own interpretation upon everything he does. Affectation, awkwardness, fear, emotion, sincerity, dignity, are primarily physical manifestations. As a matter of fact, the physical always precedes the vocal in expression. A careless, slouchy, awkward bearing will neutralize, if not annihilate, the profoundest thought, no matter how carefully expressed in words, just as surely as an affected attitude or gesture will distract or even disgust an audience, no matter how interesting the subject may be. A good rule to follow is never to do anything that will attract the attention specifically to the speaker's personality, and never fail to do that which will reinforce the spoken word. This applies to gestures.

## PROGRAM FOR WINTER TERM, 1905, SHOWING

| INSTRUCTOR.                  | First Hour.                                         | Second Hour.                    | Third Hour.                            | Fourth Hour.        |
|------------------------------|-----------------------------------------------------|---------------------------------|----------------------------------------|---------------------|
| Walters.....                 | Architecture.....6                                  | Home Arch.....10                | Farm Arch.....28                       | Architecture.....6  |
| Evans.....                   |                                                     |                                 |                                        | Ob. Dr. T & W...8   |
| Weeks.....                   |                                                     |                                 |                                        |                     |
| Willard <sup>1</sup> .....   |                                                     | Ad. Chemistry...5               | Chemistry II...37                      | Chemistry II...47   |
| Mathewson.....               | Agricultural Chemistry Lab. Mondays.....            | Ch. Metals...25-12              |                                        |                     |
| McClenahan.....              |                                                     |                                 |                                        |                     |
| Popenoe <sup>1</sup> .....   | Chemistry I...33                                    |                                 |                                        | Chemistry I...55    |
| Dean <sup>1</sup> .....      | Entomology...32                                     | Geology.....25                  |                                        | Geology.....23      |
| Scheffer.....                |                                                     | Spec. Ent.....3                 | Spec. Ent.....2                        | Spec. Ent.....2     |
| Remick.....                  | Int. Calculus...14                                  | Int. Calculus...20              |                                        | Phys. Geog...12     |
| Halstead.....                | Geometry I...54                                     | Algebra III...45                | Algebra IV...31                        | Algebra IV...36     |
| Zeininger.....               | Algebra II...44                                     | Geometry I...30                 | Algebra III...50                       | Geometry I...51     |
| Booth.....                   | Geometry II...35                                    | Algebra II...31                 | Algebra II...47                        | Algebra I...29      |
| Seaton.....                  | Algebra I...25                                      | Algebra I...44                  | Geometry II...38                       | Algebra II...35     |
| Eyer.....                    | Physics II...20                                     | Physics II...16                 | Trigonometry...22                      |                     |
| Hamilton.....                | Ag. Physics...24                                    | Physics III...20                | D. C. Mach...14                        |                     |
| Anderson.....                | El. Physics...42                                    | El. Physics...32                | Physics IV...24                        | Physics IV...21     |
| Roberts <sup>1</sup> .....   | Morphology...23                                     |                                 | Physics III Laboratory W&F...14        | Agr. Botany...24    |
| Freeman <sup>1</sup> .....   |                                                     | Botany I...34                   | Botany I...40                          |                     |
| McKeever.....                | Psychology...20                                     | Ph. of Ed...10                  | Psychology...15                        |                     |
| McCormick.....               |                                                     |                                 | Thermo...7                             | Shop Lectures...6   |
| Potter.....                  | Hydraulics...20                                     | Ap Mechanics...24               | Kinematics...19                        | Kinematics...28     |
| Dearborn.....                | Agr. Mechanics Mondays a. m.....5                   |                                 | Engineering Laboratory Mon. p. m.....7 |                     |
| House.....                   | Woodwork I...11                                     | Woodwork II...14                | Woodwork II...22                       | Woodwork I...24     |
| Wabnitz.....                 | Machine Shop all day.....                           |                                 |                                        |                     |
| Ridenour.....                |                                                     | Shop Lectures...6               |                                        |                     |
| Nicholson.....               | Blacksmithing II Monday a. m.....14                 |                                 | Blacksmithing I, Monday p. m.....20    |                     |
| Dickens <sup>1</sup> .....   | Sp. Hort...3                                        | Horticulture...30               | Horticulture...30                      | Horticulture...40   |
| Eastman <sup>1</sup> .....   | Horticulture...40                                   | Forestry...4                    |                                        |                     |
| Ahearn.....                  |                                                     |                                 |                                        |                     |
| Brink.....                   | Rhetoric II...41                                    | Eng. Lit. II...14               | English Lit. II...20                   | Eng. Lit...35       |
| Rupp.....                    | Ad. Comp...37                                       | Ad. Comp...38                   | Classics...44                          | Ad. Comp...40       |
| Rice.....                    | Rhetoric I...29                                     | Composition...10                | Rhetoric I...39                        | Reading...44        |
| Hopps.....                   | Reading...41                                        | Classics...45                   | Composition...14                       | Composition...16    |
| TenEyck <sup>1</sup> .....   |                                                     | Soil Physics...9                | Farm Mangt...28                        |                     |
| Shoosmith <sup>1</sup> ..... | Crop Product'n, 40                                  | Crop Product'n, 33              |                                        |                     |
| Kyle.....                    |                                                     | Agriculture...17                | Agriculture...27                       | Agriculture...36    |
| Calvin.....                  | S. C. Physl...19                                    | Dom. Science...11               | Home Nursing...33                      |                     |
| Rose.....                    |                                                     | Short Course Cooking II...16-16 | Elementary Cooking...16                |                     |
| Pancake.....                 | Elementary Cooking...28                             | Civics...26                     | Euro. History...28                     | Euro. History...36  |
| Price.....                   | Civics...28                                         | Pb. Speaking I...53             | Pb. Speaking I, 15                     |                     |
| Kammeyer.....                | Economics...35                                      | Pb. Speaking II, 52             | Pb. Speaking II, 13                    |                     |
| Erf <sup>1</sup> .....       |                                                     | An. Husbandry, 12               |                                        |                     |
| Kinzer <sup>1</sup> .....    |                                                     | Brds. of Stock, 37              | Brds. of Stock, 43                     | Brds. of Stock, 37  |
| Wheeler <sup>1</sup> .....   | Stock Feeding...17                                  | Stock Feeding, 42               | Stock Feeding, 34                      |                     |
| Melick.....                  |                                                     | Butter & Cheese, 21             | Bookkeeping...9                        | Dairying...25       |
| Cortelyou.....               | German II...28                                      | German II...36                  | German II...26                         | German II...25      |
| Valley.....                  | Vocal classes                                       |                                 |                                        |                     |
| Brown.....                   | Instrumental 104, Theory 83, Band 34, Orchestra, 22 |                                 |                                        |                     |
| Augspurger.....              | Piano...21                                          | Piano...18                      | Piano...20                             | Piano...21          |
| Barnes <sup>1</sup> .....    |                                                     |                                 | Hyg. Farm Ani., 34                     |                     |
| Foster.....                  | Physiology...56                                     | Dis. Farm Ani...27              | Bacteriology Laboratory...W & F, 18    |                     |
| Sweet.....                   |                                                     |                                 |                                        |                     |
| McFarland.....               | Bookkeeping...27                                    | Adv. Grammar, 34                | Bookkeeping...44                       | Bookkeeping...26    |
| Holroyd.....                 |                                                     |                                 | Adv. Grammar, 31                       | Adv. Grammar, 32    |
| Short.....                   | Anc. History...48                                   | Anc. History...63               | Med. History...19                      | Med. History...38   |
| Thompson.....                |                                                     |                                 |                                        |                     |
| Loomis.....                  | Phys. Geog. I...36                                  | Phys. Geog. II...28             | Phys. Geog. II...33                    | Phys. Geog. I...41  |
| Hays.....                    |                                                     |                                 |                                        |                     |
| Bottomly.....                |                                                     |                                 |                                        |                     |
| Spencer.....                 | Anc. History...36                                   |                                 | Algebra I...28                         |                     |
| Turner.....                  | Composition                                         |                                 |                                        |                     |
| Rickman, Rodell.....         | Printing...4                                        | Printing...5                    | Printing...2                           | Mary Davis...6      |
| Barbour.....                 |                                                     |                                 |                                        | Phys. Training...15 |
| Barnes.....                  |                                                     |                                 |                                        | Sewing II...3       |
| Cowles.....                  | Sewing II...15-7                                    |                                 | Sewing I...12                          |                     |
| Coe.....                     |                                                     |                                 |                                        |                     |

Experiment Station work.

Morning Class Hours (Tu. Wed. Thur. Fri. Sat.):

1. From 8:35 to 9:20.
2. From 9:25 to 10:10.
3. From 10:15 to 11:00.
4. From 10:05 to 11:50.



| Fifth Hour.                                     |  | Sixth Hour.              |  | Seventh Hour.                                     |  | Eighth Hour.            |  |
|-------------------------------------------------|--|--------------------------|--|---------------------------------------------------|--|-------------------------|--|
| Projection II, Tuesday.....32                   |  | W & F 26, T & S, 21      |  | Modeling, Monday a. m.....7                       |  |                         |  |
| Des. Geometry.....T 28, F 28                    |  |                          |  | Color & Design.....W & F 6                        |  |                         |  |
| Elementary Projection.....W 28, T 31, S 25      |  |                          |  |                                                   |  |                         |  |
| Object Drawing.....Tu. 33, F 36                 |  |                          |  |                                                   |  |                         |  |
| Geometrical Drawing.....W 30, Th. 20            |  |                          |  |                                                   |  |                         |  |
| Freehand Drawing.....                           |  |                          |  |                                                   |  |                         |  |
| Chemistry of Metals, Laboratory.....W & F, 18   |  |                          |  |                                                   |  |                         |  |
| Organic Chemistry, Laboratory.....W 19, F 19    |  |                          |  |                                                   |  |                         |  |
| Chemistry I, Laboratory.....W 41, F 28          |  |                          |  |                                                   |  |                         |  |
| Chemistry II, Laboratory.....Tu. 18, Th. 17     |  |                          |  |                                                   |  |                         |  |
| Chemistry IV, Laboratory.....T & T, 18          |  |                          |  |                                                   |  |                         |  |
| Entomology Laboratory.....W 18, F 13            |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
| Direct Current Machine Lab.....T & T 7, W & F 7 |  |                          |  | Arithmetic A.....39                               |  | Arithmetic A.....29     |  |
| Physics IV Laboratory.....24                    |  |                          |  |                                                   |  |                         |  |
| Physics II Lab.....T & T 18, W & F 18           |  |                          |  |                                                   |  |                         |  |
| Special Morphology.....3                        |  |                          |  |                                                   |  |                         |  |
| Plant Morphology Lab.....W & F, 22              |  |                          |  |                                                   |  |                         |  |
| Plant Diseases.....S 4                          |  |                          |  |                                                   |  |                         |  |
| Ele. Psychol.....S, 350                         |  |                          |  |                                                   |  |                         |  |
| Mechanical Drawing.....T & S 18, W & F 23       |  |                          |  |                                                   |  |                         |  |
| Engineering Laboratory.....T & F 7, W & S 8     |  |                          |  |                                                   |  |                         |  |
| Woodwork.....T & T 28, W & F 33                 |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
| Foundry.....9                                   |  |                          |  | Agricultural Blacksmithing.....T & T 12, W & F 21 |  |                         |  |
| Blacksmithing I.....W & F 20; II, T & T 20      |  |                          |  |                                                   |  |                         |  |
| Horticulture Laboratory.....T & S 3, W & T 7    |  |                          |  |                                                   |  |                         |  |
| Floriculture.....T & T 20, W & F 47             |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
| Grain Judging.....27                            |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
| Dietetics.....                                  |  |                          |  | T & T 16, W & F 14                                |  | T & T 24, W & F 20      |  |
| Domestic Science II.....                        |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
| Rehearsals.....                                 |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
| Stock Judging.....58                            |  |                          |  | Stock Judging.....59                              |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
|                                                 |  |                          |  |                                                   |  |                         |  |
| Piano.....20                                    |  | Piano.....20             |  |                                                   |  | German I.....36         |  |
| Physiology Lab.....18                           |  | 30                       |  | Physiology Laboratory.....29                      |  |                         |  |
| Bacteriology.....20                             |  | Ele. Physiology.....20   |  |                                                   |  |                         |  |
| Ele. Physiology.....20                          |  | Grammar, A.....31        |  | Grammar, A.....32                                 |  |                         |  |
|                                                 |  | U. S. History, B.....26  |  | U. S. History, B.....33                           |  | U. S. History, A.....28 |  |
| U. S. History, A.....28                         |  |                          |  | Geography.....25                                  |  | Geography.....22        |  |
| Grammar, A.....33                               |  |                          |  |                                                   |  | Grammar B.....          |  |
|                                                 |  | Arithmetic B.....21      |  | Printing.....5                                    |  |                         |  |
| Arithmetic B.....                               |  | Physical Training.....10 |  | Physical Training.....25                          |  |                         |  |
| Printing.....                                   |  |                          |  | Physical Training.....25                          |  |                         |  |
| Dressmaking.....                                |  |                          |  | Physical Training.....26                          |  |                         |  |
| Dressmaking T, T, & S.....                      |  |                          |  |                                                   |  |                         |  |
| Sewing III, W & F.....11                        |  |                          |  |                                                   |  |                         |  |
| Dressmaking T, T, & S.....                      |  |                          |  |                                                   |  |                         |  |

5. From 1:05 to 1:50.
6. From 1:55 to 2:40.
7. From 2:45 to 3:30 (Drill).
8. From 3:35 to 4:20.

One should never *make* any gestures. Let them be rather the spontaneous accompaniment and enrichment of speech. This is not to be construed into an apology for awkward gestures—they detract the attention of the audience from the thought; nor into a justification of a continuous demonstration of centrifugal force by the extremities about the body as a center—that's distracting to any audience. Such physical—and vocal—hysteria may impress the groundlings, but it can not be artistic, nor for that very reason effective. "All art finds its ultimate justification in utility," and to this truth public speaking is no exception. Gestures should be graceful and so closely associated with the thought or emotion as to form a part of it. They should be limited in number by the demands of the occasion, and no occasion should be considered to demand them unless without them the thought would be imperfectly or inadequately expressed. Gestures should be made a study but not a hobby; they should be graceful in order to be effective. To this end any physical training is good. The principles of Delsarte are perhaps no better for this purpose than swimming, vaulting, dumb-bells, or even jiu-jitsu. Any exercise that produces graceful action generally, will insure graceful gestures.

The four elements of vocal expression above mentioned have been selected because of their fundamental character. By means of the time element the speaker separates his sentences into thought-units, and forming these into groups by means of pauses he presents them like a series of moving pictures to the perceptive faculties of his auditors. It enables him also to distinguish that which is principal from that which is subordinate in the thought, and to give a certain atmosphere to his delivery which harmonizes with the character of the thought he wishes to express. Read Gray's *Elegy* with rapid movement, or Holmes' *How the Old Horse Won the Bet* with slow movement and note the effect. Likewise any sentence, when its thought-units are improperly grouped, loses not only its force but all its meaning.

By means of inflection, relations of completeness or incompleteness of thought, contrasts or comparisons are shown. Both time and inflection are prevaillingly intellectual in character and appeal to the perceptions and the reasoning powers. No matter with what care words are chosen and sentences framed, unless properly inflected their meaning is obscured and often reversed.



The tone-qualities, of which six are commonly recognized, are the speaker's means of giving vocal expression to his emotions. These tones have a psycho-physiological origin and can not be effectively counterfeited. Unless his emotions are genuine, the muscular texture of the throat, lips, tongue, palate—in fact of the entire body—will produce qualities of tone “that are as sounding brass and tinkling cymbals.” No fraud on the part of a speaker is so quickly detected and so promptly resented by an audience as a manufactured tone. It betrays his insincerity, his shallowness, and his vanity. To suppose that a manufactured orotund tone can produce enlarged, elevated, noble feeling is to reverse cause and effect. Genuine feeling of any kind will produce automatically, so to speak, the right tone. When, in addition to this, the voice has been cultivated, the effect is all the stronger. It is nature reënforced by art—an irresistible combination in any case.

Force is the volume of tone or energy with which words are spoken. As a means of emphasis, it gives prominence to central ideas, climaxes, and anti-climaxes. Without it, speech becomes a vocal waste with nothing like principality, subordination or transition to enliven it. Too much of it makes an audience restless and confuses the thought. Judiciously used it gives clearness of thought and the charm of melody. With it the speaker appeals to the will.

There is one more requisite for acceptable speech which is so generally essential and applicable that it deserves special mention. It is articulation. Its importance as a factor of success in public speaking can hardly be overestimated, and yet how common is the habit, both in private and public utterance, to telescope words and slight syllables, thereby wrecking the structure of whole sentences! Nothing is more conducive to slovenliness in speech than poor articulation.

While it is true that books, magazines and newspapers have diminished the opportunities for public speaking, occasions will often arise when the ability to speak in public will not only be a desirable accomplishment, but an absolute necessity. Success in this art, as in any other, comes only with patient, persistent effort, and by adherence to accepted principles of expression that have been established by the best speakers and sanctioned by sound judgment and good taste.

J. E. KAMMEYER.

## THE CORN BREEDERS.

A meeting of the Kansas Corn Breeders' Association was held in Topeka at the time of the meeting of the State Board of Agriculture. It was decided that hereafter extensive and interesting programs shall be arranged for the meetings, and that these meetings be held in different sections of the State, thus making it possible for a greater number of farmers to attend and consequently resulting in a wider dissemination of modern ideas along the line of plant-breeding.

Arrangements are now being made to call a meeting of the association during the week of the grain-judging contests that are to be held some time in March at the Agricultural College.

The association elected Assistant Shoemith, of the State Experiment Station, secretary and adopted the following resolution in recognition of the work done by the different State experiment stations and the United States Department of Agriculture:

WHEREAS, Experiments conducted by the various State experiment stations and by the United States Department of Agriculture have proved that corn, grain, and other farm crops which are adapted to one locality are not suited to other localities, differing in soil, climatic, and other conditions which affect the growth of plants; and

WHEREAS, The State of Kansas is of vast extent and has widely differing soil and climatic conditions; and

WHEREAS, The variety tests of corn, grain and other farm crops conducted at the Kansas State Experiment Station do not show what varieties are the best adapted to other parts of the State; and

WHEREAS, The development of better strains or varieties of farm crops for various sections of the State would result in a direct and permanent increase in yields of Kansas crops and in the betterment of the material welfare of the agricultural industries of the State; be it therefore

*Resolved*, That the Kansas Corn Breeders' Association request the State legislature now in session that it recognize the importance of plant breeding and the adaptation of the varieties of farm crops by appropriating two thousand dollars (\$2,000) to the Agricultural Department of the Kansas State Agricultural College, or a sum sufficient to enable it to conduct experiments on a more extended scale than it has heretofore been able to do, in the breeding and improvement of farm crops and the adaptation of the same to the various sections of the State.



## PROGRAM FOR 1905, MANHATTAN GRANGE.

## FIRST QUARTER.—Legislation.

## JANUARY.

What national legislation endorsed by the National Grange is of the greatest importance to members of this Grange, and what can we do to promote it? S. B. Barnes, S. Koppenheffer, S. A. Black. Mrs. Stella Swingle.

SUPPLEMENTARY TOPIC: OUR SUBORDINATE GRANGE.—Is it important to have the ritual work well rendered, and will our officers attend to it? E. W. Westgate, Mrs. Patience Ingraham.

## FEBRUARY.

What State legislation is of most importance to the farmers of this State, and what can we do to promote it? Pres. E. R. Nichols, K. S. A. C., B. O. Cooley, Emmet McDonald, V. V. Akin.

What features of the literary work are most helpful to members, and how can those features be strengthened? Mrs. Minnie Odle, Mrs. Lillie Hepler.

## MARCH.

What is the most important matter to come up for consideration in our primary caucus or local election, and what is our duty in regard to it? Wm. Hepler, S. F. Goheen, J. F. Swingle, Mrs. Mary McDonald.

What Grange events should be observed by our Grange in addition to holding the regular meetings? Mrs. Helen Barnes, Mrs. Carrie Shumway.

Recitation ..... iMss Fay

## SECOND QUARTER.—Education.

## APRIL.

What action can the Grange take to secure the introduction of nature studies in the public schools? Miss Harriet Parkerson, C. G. Swingle, A. Docking.

SUPPLEMENTARY TOPIC: THE POMONA GRANGE.—What should be the relation of the Pomona to the subordinate granges in its jurisdiction? Mrs. Edith Crans, Miss Winifred Westgate.

The Garden and the Table ..... Mrs. Mary Deibler  
Music ..... Mrs. Nora Ingraham

## MAY.

What action can the Grange take to enable the farmers to secure their just rights, and receive full benefit from the agricultural colleges and experiment stations? Prof. A. M. Ten Eyck, L. S. Fry.

Domestic Science for Farm Homes ..... Prof. Henrietta Calvin

How can the Grange be most helpful to mothers? Mrs. Amelia Nixon, Mrs. Barbara Goheen, Mrs. Ellen Koppenheffer.

## JUNE.

What should be the position of the Grange in regard to farmers' institutes and field educational work, and in keeping the management of these in the hands of the true representatives of the farmers? E. W. Westgate, G. W. Townsend, J. G. Matter, I. G. Williston.

Concerning social life in the country neighborhood. Mrs. Julia Neusbaum, Mrs. Anna Docking, Miss Lucy Fay.

## THIRD QUARTER.—Agriculture.

## JULY.

Music ..... Mrs. Hudson

What crops are most profitable in this locality, and how can they be produced at less cost? G. H. Chandler, Riley Ingraham, J. A. Hepler, James Allingham.

SUPPLEMENTARY TOPIC: THE STATE GRANGE.—What should be the scope and purpose of the exercises of the State Grange session? Mrs. Lucy Warner, Mrs. M. E. Townsend.

## AUGUST.

What are the prime essentials in feeding animals for dairy or beef purposes, and can it be done in this locality at a profit? John Warner, Wm. Deibler, Columbus Nixon.

What policy should be adopted by the State Grange for increasing the membership in the State? John Shumway.

Short cuts allowable in household routine. Mrs. Mary E. Hudson, Mrs. Margaret Walters.

## SEPTEMBER.

What improvement can be made in the present methods of marketing the products of the farm? R. G. McAninch, J. W. Holly, H. L. Neusbaum, J. F. Odle.

What educational work should be undertaken by the State Grange for the mental development of members? Mrs. Nora Ingraham, Mrs. Susie Swingle.

Book Review ..... Mrs. Julia Hays

## FOURTH QUARTER.—Development.

## OCTOBER.

What action can be taken by individuals at their homes for promoting their knowledge of their business and for their general mental development? Professor Erf, R. J. Kinser, Geo. H. Hepler, Mrs. Eva Akin.

SUPPLEMENTARY TOPIC; THE NATIONAL GRANGE.—What are the relations of fourth-degree members to the National Grange, and their duty in attending its sessions and promoting its interests? S. B. Barnes.

## NOVEMBER.

Winter care of Bulbs and Tubers..... Wm. Baxter

What can be done by farmers of this locality to develop the resources of their farms in the most profitable manner? Professor Dickens (Fruit); J. L. Dow (Extras); I. S. Smith (Soil); Mrs. Roxy Hepler, Mrs. Lucy Knight, Mrs. Jennie Black, (Poultry).

## DECEMBER.

What can be done to increase the attractions of the farm home to make it the brightest and happiest spot on earth? Professor Walters, Miss Minis, Mrs. Julia Allingham, Mrs. Nora Williston, S. E. Hudson.

Recitation..... Mrs. Neusbaum

## COMING FARMERS' INSTITUTES.

- Feb. 13-14, Arkansas City, Professor Erf and Assistant Eastman;
- Feb. 14, Sedan, Professor Erf;
- Feb. 16, Peabody, Professor Erf and Dr. Barnes;
- Feb. 16-17, Edgerton, Professors Calvin and Willard;
- Feb. 17, Lincoln, Professor Dickens;
- Feb. 18, Paxico, Assts. R. E. Eastman and G. C. Wheeler;
- Feb. 20, Belleville, Professor Erf and Assistant Shoesmith;
- Feb. 21-22, Rome, Professors Popenoe and Walters;
- Feb. 22-23, Oneida, Professor TenEyck;
- Feb. 27-28, Randolph, Professor Willard and Assistant Wheeler;
- Mar. 1, Bucklin, Professors TenEyck and Erf;
- Mar. 3, Sedan, Professor TenEyck;
- Mar. 7, Frankfort, Professor Walters and Assistant Shoesmith.

The United States civil service commission announces examinations for the following positions on the accompanying dates in Topeka: Teacher in the Indian service, salary \$60 a month, February 23 and 24; highway engineer, salary \$2250 a year, February 23; scientific aid, department of agriculture, salary \$600 per year, February 23; building superintendent, Panama canal, salary \$150 per month, February 23; clerk, draughtsman and surveyor, \$125 per month, March 8 and 9.

Professor Erf is making arrangements to take the students in stock judging to Fort Riley February 22. Captain Short, of the 13th Cavalry, has extended the invitation and will give the students a chance to inspect the stables and equipment and judge a class of light horses. He will also give a demonstration of his methods of training, as well as an exhibition of horsemanship. Fort Riley has the finest riding hall in the United States, and usually gives exhibitions such as are seen in first-class circuses. The Wolff Packing Company has also invited the class to Topeka, where a demonstration of killing and butchering and the general features of meat packing will be given. Those interested in the dairy industry will be given a chance to visit the Continental Creamery Company and the Topeka Pure Milk Company.—*Daily Republic*.



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PROF. J. D. WALTERS.....Local Editor  
PROF. J. T. WILLARD.....Alumni Editor

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## LOCAL NOTES.

The mid-term examinations are being held to-day, February 11.

The local horticulturists are still hoping that the cold weather may not have hurt the peach buds.

Professor Brink reports that Mrs. Brink, who has been dangerously ill for two weeks, is gradually improving.

The dairy laboratory has a new "Sampson Jumbo" butter printer, which forms and prints sixty packages at one filling.

The Chemical and the Veterinary Departments are enjoying new cases for storing books, bulletins, apparatus, and specimens.

The twenty-third annual convention of the Y. M. C. A. of Kansas was in session at Salina, February 9 to 12. This College was represented by students R. Greene, Frank Harris, R. C. Conwell, J. R. Garver, W. B. Garnett, J. R. Brock, E. C. Farrar, W. T. McCali, and A. D. Halloway.

Mrs. Martha J. Booth, mother of Assistant R. F. Booth of this College, aged 53 years, died at her home in this city, February 7, of heart trouble. The body was taken to Morris, Ill., for burial, after short funeral services conducted by Rev. O. B. Thurston, at the Gist home, 815 Humboldt street. Mrs. Booth came here last September to make her home with her son.

Two of the senior boys, C. B. Swift and Ed. Logan, are working out an experiment to determine the number of bacteria in the air of the dairy barn at different periods during the day, and also in the milk until it reaches the separator. This experiment will be the subject for their theses and will also be published for the benefit of those interested. The work is under the direction of Assistant Foster, of the Bacteriological Department.—*Students' Herald.*

Several new pieces have lately been added to the apparatus of the Woman's Gymnasium, including a fine Howe scale, for weighing and measuring, and a spirometer for testing breathing capacity. The Board of Regents has recently provided for the purchase of a new piano, which is a much-needed addition. The number of girls enrolled in classes this year is somewhat smaller than in former years, owing to the fact that the work is no longer compulsory, but the girls who do take work are interested and enthusiastic.

Professor Erf has returned from Champaign, Ill., where he gave his report as treasurer of the American Breeders' Association, at their annual meeting. He also delivered an address on "Coöperative Stock Breeding."

The students of the architectural course met last Saturday afternoon to consider the organization of an architectural club. Fourteen members were present or represented, and much interest was manifested. Temporary officers were elected and a committee was appointed to draft a constitution and by-laws. The next meeting will be a called one, after which it is expected to meet regularly. An effort will be made to obtain permission to meet evenings, twice a month, in the City Library.

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#### ALUMNI AND FORMER STUDENTS.

Helen Kernohan, '04, will present a paper on domestic science at the Lincoln Farmers' Institute, February 17.

Fannie Dale, '01, is now stenographer and bookkeeper in the Mechanical Department, Mary Yenawine, junior in 1900, having resigned after over a year of successful service.

I. W. Williams, student in 1895, and now a farmer of Rusk, Okla., visited the College recently for the first time in nearly ten years. He was much pleased with everything that he saw excepting the location of Physical Science Hall.

Del W. Randall ['99], of Manhattan, has been appointed the local agent in this city for the International Correspondence Schools, of Scranton, Pa. Mr. Randall is acquainted with the work and is said to be one of the company's best men in the State.—*Junction City Union*.

C. P. Hartley, '92, of the Department of Agriculture, Washington, D. C., recently visited his brother J. W. Hartley, '92, and called at the College. He was on his way to Champaign, Ill., where he delivered an address before the American Breeders' Association last week.

Geo. K. Thompson, '93, superintendent of public instruction of Marshall county, has purchased a hardware business in Marysville, which he will manage in the future. His term as superintendent expires next May. In the meantime Mrs. Thompson, Eusebia Mudge, '93, is assisting him in the office.

A. L. Cottrell, '03, is still in the employ of the Alfalfa Meal Company, Omaha, Neb. He has been called off the road and given the position of manager of sales and advertising. This is a position of great responsibility, but one which he enjoys very much and is well fitted to fill. This company manufactures alfalfa meal and alfalmo, the latter a combination of alfalfa and molasses, and sold largely instead of bran and oil-meal. He wants the *INDUSTRIALIST* in order to keep in touch with his "esteemed Alma Mater."